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GLEANINGS

A JOURNAL DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS

BEE CULTURE

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"QUEENSOUND" is a word proposed by L. Kreutzinger to signify that a colony is all right as to having a good laying queen.

SACKS OF BURLAP or other material are advised by Editor York in preference to boxes, for shipping beeswax. Saves freight. [Good suggestion!—ED.]

"LIVE BEES are sometimes shipped on ice, so as to keep them dormant during the journey," says a clipping sent me. Some reporters are well equipped as to imagination.

A QUESTION for discussion at a coming bee convention in Canada is, "Is it desirable to keep down swarming?" Now, how far down does that mean? down to one, or down to three swarms per colony?

J. A. STONE, the genial secretary of the Illinois Association, is optimistic in *American Bee Journal* regarding plain sections. Outside sections in super are filled sooner, ship better, because better filled out to the wood.

HOW TO GET RID of honey, Editor Hill says, is not a matter of so much concern down his way as to get a good price for it. But down our way, friend Hill, getting a good price is only part of the "how" to get rid of it.

IF THOSE WHO SAY *Apis dorsata* can not be domesticated are right in saying it can not live in this country, then its introduction can hardly do any harm. I never believed it could live in the North, but thought it might in the South.

QUOTING what Messrs. Taylor and Mackenzie have said about boiling foul-broody honey, *Le Rucher Belge* says: In presence of such contradictory affirmations which can not be verified till next season, we recommend boiling the honey during the maximum time.

D. W. HEISE and Editor Holtermann seem likely to get into a quarrel as to whether the use of beeswax instead of paraffine, in covering tumblers of jelly, as mentioned in a Straw, would create an increased demand for beeswax. Don't, brethren. The only idea in the

Straw was that many a housewife could use beeswax who had no paraffine on hand.

TWO BEE JOURNALS, quoting F. G. Quirin, *GLEANINGS*, 845, direct that honey in glass, to be liquefied, should be set in the oven of a cook-stove. Some one will try that and have the glass burst and the honey flood the oven. Brethren, why don't you tell your readers that Mr. Quirin has the glass vessels in a shipping-case?

EDITOR YORK has gotten up a very neat little Honey Almanac, containing the honey-leaflet so well known, honey-recipes, and tables interspersed giving the correct times for a properly regulated sun and moon to rise and set, with other useful information. [Ah! I see. Bro. York has anticipated me—just gone and got up a handsome honey-leaflet. See editorial elsewhere.—ED.]

J. E. CRANE's article, p. 42, is entirely correct, but it only shifts the question one step further back—is the black carried up from the brood-nest into the super caused by travel-stain, or what is it? [I do not believe we can tell where the black does come from—perhaps sometimes from out of the hives; but I suppose that, in the majority of cases, it is chunks of propolis.—ED.]

LATELY it has become quite the fashion to have departments in bee-journals giving items from journals in different languages. L. Joachim is doing excellent work condensing from American bee-journals in that growing French journal *Le Rucher Belge*, and M. Leger from the German; as also L. P. Pirson, in *Revue Eclectique*. W. Fitzky has a valuable department in the German *Centralblatt*, but confines himself to his own language.

BEST HIVE for beginners being asked for in *American Bee Journal*, more of the veterans agree upon 10-frame Langstroth than upon any other. [It is a fact that the call for the 10-frame is somewhat on the increase, as our orders from season to season attest. We may talk about the eight-frame being big enough; but to insist that it is large enough for all localities, all conditions, and all beekeepers, is foolish, to say the least.—ED.]

ISN'T THAT SMOKE BUSINESS a little mixed, p. 49? C. Davenport says pure smoke is better than smoke mixed with hot air. So it is;

it's stronger. And isn't pure smoke better than smoke mixed with cold air? With the cold blast you are blowing air on the bees, together with what smoke goes along with the air for company. With the hot blast are you not sending out pure smoke? [Hot smoke, as pure smoke as it can be, is the stuff that gives me the best satisfaction.—ED.]

WHAT A WHOLESALE recanter ye editor is, when once he finds he's in the wrong! From thinking 15 minutes enough to boil foul-broody honey he has gone clear up to 3 hours, p. 49. I protest that there is no sort of proof for the necessity of boiling more than $2\frac{1}{2}$ hours. [It is rather humiliating to have to turn "right about face;" but when one sees he is wrong, it is the only honest thing to do. Three hours! why, if two and a half hours is just enough—just barely enough—why not make a sure job of it by taking three hours?—ED.]

I KNEW that something stronger than water was sometimes drunk at Medina, on the sly, but I didn't suppose that the editor indulged so freely that he wouldn't straighten up in two weeks' time. But he still seems fuddled, Jan. 15, p. 41, and insists, just as he did two weeks before, that "wide frames are section-holders without top-bars," and innocently asks, "If not, what are they?" Why, bless your heart, wide frames are section-holders *with* top-bars! [Cart before the horse this time, sure. What I had in my mind, but didn't say it, was this: "Section-holders are wide frames without top-bars."—ED.]

JOHN ARMSTRONG proposes, as spacers, buckshot with nails driven through them. That would give metal spacers, but the lead would not dull the uncapping-knife. But the shot being round, there seems no advantage over staples. Possibly a lead bead could be made that would be a good thing. [I think we make much more ado about the possibility of the uncapping-knife being dulled on a metallic spacer than actual experience with such spacers seems to warrant. I talked with Mr. Frank Boomhower, who uses staple spacers. I do not remember exactly his remark, but it was to the effect that he had no trouble along that line, and that the talk in the bee-journals was based on theory and not actual experience.—ED.]

WHAT IS THERE IN US that makes us laugh at the calamities of others? When I read on p. 60 the multiplied afflictions of Bro. A. I. Root, with crick in back, rubbers off, shoes untied, and nose unwiped, I just lay on the lounge and laughed till I shook all over. [Been there yourself, eh, doctor? But, say; I wish you could do something to make him stay indoors till he gets well. He no sooner feels a *little* better than out he goes again, tramping around in the wet; gets chilly, goes in, hovers over the steam-pipes, *with his rubbers, overcoat, and hat on.* After he gets well cooked up, and hot, he goes out again; then at night he wonders why he has the neuralgia, the grip, and a lot of other aches and pains. I have been trying to give him some good fatherly (?) advice. Somehow he thinks he is older than I, and ought to know better. He

has been having a regular siege of grip with all its attendant pains, during the past few days; and now, contrary to my explicit orders, he is outdoors again. Say, doctor, do you know of any way of mesmerizing him into submission? I wish you would do it if you can.—ED.]

MORE HONEY DEW was stored last year all over the world than ever before, according to reports. Perhaps honey-dew was no more plentiful than usual, but the scarcity of floral nectar made the bees store what in other years they neglect. [Perhaps; but when there is honey in plenty from the fields, I have noticed that the sidewalks under the trees are not spotted by the spray of the honey-dew as they are during those times when honey is scarce. Is it not possible that Nature has so provided that, when nectar is not secreted in the usual way, because of certain conditions of atmosphere, those same conditions are favorable to the secretion of another form of saccharine matter, or, rather, to the growth of certain insects? You know there is a wonderful harmony in nature. The all-wise Creator has in many ways made one hand to help the other. ED.]

THE OLD UNION has 152 members and \$171. The new Union has 465 members and \$175. Pity they didn't marry. [Some comparisons are odious, but I hope this is not one of them. The new Union has larger annual expenses, owing to the annual conventions, and salary paid to the secretary. All of this money is legitimately used, and is productive of good. The old Union confines its labors entirely to the defense issue; the new Union takes up the whole field, defense and adulteration, besides helping to foster our national bee-keepers' convention, an institution that brings our best men face to face and hand to hand. What we want the Union to do is to use the money for the best interests of the pursuit, and yet keep a comfortable surplus. The new Union has a large membership, and yet enough money back of it to keep it financially in good trim.—ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOGRAPH."

Un pour tous, et tous pour un.—French motto.

One for all, and all for one;
Such is the motto of the hives;
Why can not men adopt the plan,
And make more sweet their lives?

AMERICAN BEE JOURNAL.

Mr. Thaddeus H. Keeler says he has "fallen in love with the tall sections."

Mr. A. B. Bates tells why, in his opinion, Italians store better honey than blacks. It's pretty hard to show he is wrong in the following reasoning:

Honey is heavier than water, and, as a natural consequence, the richer of the saccharine substance would settle to the bottom; and while black bees during a copious flow of honey might store as much honey (less

the weight of the evaporation of water it contains), the Italian bee, having a longer reach, cleans out the cup of the blossom-cell to the bottom, giving us not only a richer and finer quality from the same bloom, but the honey requires less ripening or evaporation of water. The same quantity when first stored would result, in weight and bulk when ripened, largely in favor of the Italians. My observation is, that the same size of comb when first stored by the Italian is more dense, needs less ripening, and is, therefore, heavier than that of the black.

To fasten foundation into brood-frames, Mr. L. E. Thompson says he saws the top-bar in two lengthwise to within an inch of the end. Slip the sheet in and nail the frame together. E. R. R. says this is a very old idea.

J. A. Bearden, of Tennessee, says a ten-frame hive is better than an eight-frame in his latitude. He describes a hive-tool that seems to me to be a good thing; but what a pity there is no cut of it! The description occupies two inches, while a cut would not need to be more than half an inch, to say nothing of clearness, and time saved.

On the first page of this journal, Jan. 12, Prof. Cook gives his views on the nature of honey-dew. The interest with which he clothes the subject makes one wish, as Oliver Twist did for soup, for "a little more." The tenor of the article is to show that honey-dew is not of plant origin, but from the larvae of insects working in scores. His conclusions are, as stated by himself:

Honey-dew is always a secretion from insects. It is always wholesome, and often delicious. It may be produced in exceeding quantities, and become the source of much honey. In such cases, coccid honey-dew will often be rank and ill flavored, and should be kept as much as possible by itself, and sold for other purpose than table use. Honey-dew is secreted by insects to serve them in attracting bees, etc., which shall repel the bird enemies of the nectar-secreting insects."

The article goes far toward rendering honey-dew honey more palatable. Wouldn't it be a good plan to avoid the use of such a word as "lice" in speaking of aphides? There's much in a name. Some don't like a fiddle in church, while a violin charms them. By the way, Prof. Cook's idea of a summary at the end of an article is excellent.

C. Davenport, of Minnesota, following the above, gives an account of the remarkable endurance of bees in cold weather. On the 20th of last November, the mercury fell to 18° below zero. A terrific wind blew, and the air was filled with ice and flying snow. Some hives were uncovered, and some tipped over. They were thus exposed from some time in the night till the next afternoon. Although many bees perished, no colony was destroyed. The loss in many hives not disturbed was about as great, however. As bees can work well at a temperature of 104, this shows that they can live without "clothes" in a range of 122 degrees.

"Honey as a Fat-producer" is discussed by Dr. Miller. An excellent half-tone of the doctor is also given; and if the object in showing it is to afford a "word-picture" of the

fattening power of honey, then there's hope for those who have become tired of so many "anti-fat" remedies; for certainly our friend looks comfortable. In answer to the question as to whether honey is conducive to fatness, he admits he doesn't know, but seems to think, from analogy with corn and sugar, that it is. Probably, however, the chief value of honey is as an assimilant of other foods. It causes other food to agree with me, and, when used with milk, that is enough of itself to furnish a complete meal. The use of honey rapidly creates a liking for more. A few years ago I could eat only a spoonful, while now half a common section is none too much.

The above was written before I read what is said on page 27 about great honey-eaters. It seems that Mr. York doubted whether three persons ever ate a pound of comb honey at one sitting. Mr. Murry says two often eat that much. Certainly—why not? Evidently Mr. York can't bear honey as well as some of us human bruins can. I can eat half a pound of good clover honey at one meal any day, with impunity (or milk without the impunity). But I never eat on a wager nor to show what I can do. I eat to live, and stop when I have enough.

AMERICAN BEE-KEEPER.

The editor strongly favors a test of *Apis dorsata*, and gives a fine view of this bee, greatly enlarged.

G. M. Doolittle follows with an article on that important subject, getting ready for next season. Doolittle can't be condensed, so he must be handed over bodily.

A. E. Manum has begun a series of articles on the proper size of hive. He takes neither extreme, but proposes to show why large ones should be used in some places and small ones in others. Mr. Manum's experience will enable him to handle the question in a scientific manner.

J. Ikeda, of Tokyo, Japan, has an illustrated article on bee-keeping in his country. Their quaint way of bleaching wax, cutting out comb, pressing out inferior honey, etc., is interesting, as the picture shows how it is done. Mr. Ikeda publishes an agricultural journal in his language, with a bee department.

Arizona honey is described by C. A. Hatch, of Wisconsin—a man who knows how to do it. There are three main sources in the valley of the Salt River—mesquite, alfalfa, and wild ground-cherry. He says the average quality of the honey produced there is rather inferior to that of white clover and basswood. Mesquite is the lightest in color and best in flavor. But alfalfa is the honey-plant. When that fails, all else is minus.

The close connection between good prices for honey and a good salesman is shown by Mr. Hill in the fact that M. M. Baldrige sells

five-pound pails of extracted honey in the vicinity of Chicago for \$1.20—24 cts. a pound! Mr. Baldrige must be a graduate of some standard typewriter company.

The editor offers to be one of a hundred who will give \$1.00 or \$5.00 to prosecute the men who robbed Edward Smith, of Illinois, of his honey, a full account of which we gave in our issue for Nov. 15.

PROGRESSIVE BEE-KEEPER.

As to burr-combs and width of top-bars, as discussed by G. M. Doolittle, in his "Recapitulation," see editorials in this issue.

F. L. Thompson, in the December issue, makes a good point in his protest against the persistent advertising of *pure* bees' honey—as if pure honey were the exception, and bees only one kind of creatures that store it. He thinks it creates an unjust suspicion. He well says, "The *only* honey is bees' honey."

R. C. Aikin contributes Chap. XIV. of his article on hives, here speaking of size, form, and manipulation. Quite likely these articles in pamphlet form would be what Horace Greeley called "mighty interesting reading," and a valuable addition to standard bee-literature. Mr. Aikin's experience is so long and varied as to add weight to his conclusions.



HE OR SHE.

Confab between Dr. Miller and E. E. Hasty.

Did you ever see such audacity as that displayed by that man E. E. Hasty? I called his attention to the fact that he owed Mrs. Bee an apology for calling her "Mr." Bee, and, instead of promptly apologizing to her, as any gentleman ought, he just gets stubborn, and insists he's going to keep right on being impolite, and will call her "Mr." whenever he likes. See *Review*, p. 365, which I hope you will copy, just to show how naughty he is. I might have let the matter pass in silence if he hadn't told in the last sentence what ails me. I don't think it's nice of him to twit me of it, even if I do like to show off. Lest he should get a following, I hasten to do my best to show his heresies.

"Bible usage, literary usage, and household usage" are claimed as supporting the practice of calling a worker bee *he*. Friend Hasty, why didn't you give us a few illustrations? Suppose we look at the Bible. I think there is no place in the Bible where a pronoun in the singular is used for the word *bee*. The ant, however, is a near neighbor, of which it is said, "Go to the ant, thou sluggard; consider her ways, and be wise." Notice that *her*,

Hasty. Also in this: "The spider taketh hold with her hands, and is in kings' palaces." You will find places where the masculine is used to represent both sexes in general, but I have some doubt whether you will find in the Bible any case where the female is referred to and called *he*. I'm just wondering whether this hasn't been a deep-laid scheme of Hasty's to get me to read my Bible.

In literary usage, there comes to mind that classic gem about the bee, which says, if my memory is not at fault,

How skillfully she builds her cell!
How neat she spreads her wax!

As to household usage, I think I have yet to hear for the first time a worker bee called *he*—always *it*.

That calf story doesn't count. Those poor misguided boys are not to blame for using bad language with such a man as "Uncle Emerson" to teach them. The only wonder is that that calf isn't called John instead of Dinah. Right in that same line it just occurs to me that I've often heard a male cat called *she*, but I think I never heard a female cat called *he*.

Logically you think the worker should be called *it*, but dislike that on account of stiffness. I don't see that it makes it a whit more limber to say *he*. At any rate, I don't believe you ever hear any one call a fly *he*, nor indeed any other insect, except you and your kind when talking about bees. You always speak of any other insect as *it*.

But *is* the worker functionally a neuter? Her functions are to keep house, nurse the babies, and hustle around to get something to put on the table. If those are neuter functions, then all of our household goddesses should be addressed as *it*.

"Tell you what ails you," Hasty. You've been living so long on one meal a week, taking 12 ounces of honey at a mouthful, that you've become somewhat dyspeptic, and have soured on the female persuasion, else you never would get stubborn and act this way when one tries to teach you your manners.

Marengo, Ill., Jan. 11. C. C. MILLER.

[The paragraph in the *Review* reads as follows:—ED.]

No, comrade Miller, that apology to Mrs. Bee will not be forthcoming. Hasty wouldn't be Hasty unless he could face the nearly unanimous company of his fellow bee-beepers, and smoothly tell them that they are wrong. The habit of calling the worker-bee "*she*" is a mere fad, not well founded in the facts, not in accord with the best usage of our language; and the rest of the human race not bee-keepers neither follow nor like the usage. Unless I mistake badly, Bible usage, literary usage, and household usage are all three in accord in allowing masculine forms to be used for real females, whenever the matter of sex is immaterial or inconspicuous (especially when the writer desires his reader to ignore it), and still more is this the case with bees, which are not practically females but neuters. At our house they are raising a nice calf. Its name is Dinah. The two little boys of the house and their mother are specially interested in the calf. Now, when Dinah's name is put in a sentence the pronouns must, of course, be feminine; but otherwise masculine pronouns are sometimes heard. "*He* capers." "*He* has very small and quite sharp horns." "*He* thinks it a solemn duty to drink up all that's offered him, no matter how much there may be of it." If I am right this style of speaking is nearly or quite universal; and popular usage, when founded in reason, always defeats in the end even the great

grammarians of the language—and Hasty figures that you will be defeated, ought to be if you are not.

What are the absolute facts of the case? The worker (barring a few exceptional ones) is *anatomically* a female, but *functionally* a neuter. If we say "he" we contradict the anatomical truth. If we say "she" we contradict the functional truth. Can't help doing one or t'other. Which, then, is the less important aspect of the two, that may we contradict that? I think that we must say that the anatomical aspect is usually less important. The strictly logical result would be the use of neuter pronouns; but neuter pronouns, used of living things, gives a stiffness to our discourse which is not agreeable. Both speaker and hearer feel better when the pronouns are thrown into the masculine, which is perfectly admissible. Though you paint an inch thick you can't get rid of the ugly fact that readers will feel that sex must be important in some way if feminine pronouns, in non-figurative discourse, are used of an insect; and that is really the most important consideration we have to meet in the case. Tell you what ails you, brethren. You are proud of knowing more about the bee's gender than the laity do; and therefore you must needs be airing your wisdom before them, just as callow preachers air their Hebrew.

[This was submitted to Mr. Hasty, who replies in his own inimitable way:—ED.]

Is that you, Dr. Miller, gnawing at the toes of my cold corpse in the coffin of the "Condensed View"? No more than I expected—and I suppose I must wake up enough to kick a little.

Never yet heard a worker bee called "he" in household usage? This declaration is simply amazing—almost too amazing to reply to. Are we to suppose that, whenever you are in a household other than your own, you do all the talking, and never hear anybody say any thing? (When dead folks do kick they don't kick politely.) I simply wish to appeal to all observant people concerning the speech of our ordinary American folks (bee-keepers excluded), if with them a bee is not "he" a million times where it isn't *she* once—and at least twice as often as "it." The most prominent characteristic of the bee, as impressing children and common folks, is its disposition to give chase, and to sting. It thus gets itself on the same footing as the mosquito—an insect which apian householders have no special kink in regard to. Now, when a man slaps at a mosquito and kills the game (almost breaking his own skull to do it) he gleefully shouts, "I've got *him*!"—very rarely indeed, "I've got *it*," never known to be, "I've got *her*." Manifestly the speech would be the same if a bee instead of a mosquito were the assailant. And please notice how completely the gender is contradicted in the example given. If I am right the mosquito has no neuter form, and the male seldom or never bites. "She" does all the biting, and "he" gets all the maledictions.

What the doctor says about flies and other insects seems to me to be very wild also. Yet if I should quote actual examples of such speech he stands ready to claim that some crank of an uncle, or some queer-spoken foreigner of a hired man, had corrupted the speech of that particular household—won't go at it in that way. There are certain bits of immortal writing which reflect the American household speech, and I'll go for them—not as literature particularly, but as evidence of what our household usage really is. One of the foremost of these home gems is Theodore Tilton's—

Baby bye,

Heie's a fly.

Let us watch *him*, you and I,

and so on to the end, stuffed full of masculine pronouns. Note again:

"Will you walk into my parlor?" said a spider to a fly.
 Then up *he* springs; but both *his* wings
 Were in the web caught fast.

Note again from "The Ant and the Cricket:"

Then away *he* went to a miserly art,
 To see if to keep *him* alive *he* would grant.

Here both ant and cricket are called "he," and the ant is a neuter, or pseudo-female, just like the bee. Note also the beautiful oriental story of Solomon and the *king* of the ants, and its pronouns.

I think I have heard that, among the *prominent* languages of the world (ancient and modern included) English is the only one that pretends to hold out for literal accuracy in the matter of gender, all the rest having idealized their genders almost entirely. And English, I have been trying to show, has gone a long distance in the same direction, or at least in the direction of optionalism, and is now holding out for only so much of literal accuracy on this point as clearness of meaning requires. No live language can stand still; and no language can easily resist the influence of other tongues round about it. Our little squad of bee-writers are trying to reform backward, in a direction counter to a powerful tide, when they want an insect which isn't a female, after all, called "she."

This alleged reform, if it could be successfully inflicted on the language, would at once create an urgent need for some other pronoun than "she" to express the *real* femininity of the queen, and perchance some day a more intense feminine pronoun would come. As an example of this sort of thing, Russian children, being obliged to call the priest "papa," now call their real papas "papinka."

I believe I didn't say that the use of feminine forms was unknown in literature, nor even that it was rare; so citations of that character contradict nothing. What I said was that masculine forms, not in strict accuracy, were fully supported by usage, and that assertion is hardly shaken yet, I think.

As to Bible usage, that is not an important corner of this controversy; but as GLEANINGS has very many Bible-lovers among its readers I should like to talk Bible a little on its own account. I believe that more than half of real Bible-lovers have never got on to the fact that the Bible *always substitutes the masculine for the neuter* in the possessive case of the pronoun. Not a single "its" in all the Bible, when there would naturally be such multitudes of them—always "his." Failure to consider this upsets the meaning of many passages. Readers, when they come to such a "his," do not dream of its referring to the neuter antecedent right at hand, but think it must refer to the Lord, or to some person not plainly in view. Age, as well as sex, is rather violently ignored in the Bible sometimes. "Ye on the sabbath day circumcise a *man*" (that is, a babe eight days old). "Christ tasted death for every *man*." Here it is certain that woman

and child as well as man are meant; and, of course, if a pronoun is called for in such a sentence it is masculine: "Man goeth to *his* long home."

When an ant is called "she" it is to answer some poetic idea, not to define gender at all; spider and bee ditto.

E. E. HASTY.

Richards, O.

[Our older readers will recognize the name of Hasty as an old friend and correspondent who used to write considerably for GLEANINGS in the early '80's. He enjoys the distinction of being one of the breeziest and most interesting writers in all beedom.]

I am the more interested in Hasty's side of the question, because our A B C has long used the term *he* in referring to the ordinary bee; and A. I. R. has always stuck to that use of the pronoun, and now to have so able a champion as Mr. Hasty is indeed consoling.

Dr. Miller and I have quarreled over this same question not a little; and as a sort of compromise in the last edition of our book I strove to strike middle ground; and wherever I found the pronoun *he* I changed it to *it*. But somehow it took the "life" out of much that is said. Like Hasty I associate with "*he*" smartness and wickedness; and with "*she*," softness and goodness.

I am sorry now that I did not leave it *he* all the way through. It might have raised a rumpus with Dr. Miller, but he and I are used to having squabbles.—Ed.]

BEE-KEEPING IN CUBA.

The Fine Flavor of the Bellflower Honey; No Immediate Danger of Cuban Honey becoming a Competitor of American Honey.

BY W. W. SOMERFORD.

Mr. O. O. Poppleton's article in Dec. 15th GLEANINGS, "Honey from Cuba, and its Quality," is one of the best articles on the subject, of each and every location, its special flavor and quality of honey, that I have run across from the pen of any one. And, by the way, it was Mr. Poppleton who gave me the first taste of Cuban honey, out at Punta Brava de Guatao, Provincia de la Habana, almost ten years ago; and he it was who gave me my first lesson in Spanish; took me to Havana, introduced me to Dr. Warner, who gave me directions out to Mr. Casanova's apiary, twenty miles from Havana. Mr. Casanova was then one of the leading bee-keepers on the island, having over 500 modern hives, sold to him by Mr. A. J. King, of New York, the man who introduced the movable-frame hive, or modern bee-keeping, in Cuba.

But the worst feature of the introduction was foul brood, from D. A. Jones, of Beeton, Canada, along with some fine queens from him, to Pedro Casanova. As I took Mr. Casanova's apiary on halves for a number of years I know some things about foul brood in Cuba that I am going to tell before I am through writing about Cuba as the bee-man's paradise. And as to the Spanish language,

the first few nights I spent on the island, ten years ago, I camped out, and couldn't then ask for a night's lodging or buy a railroad ticket. The language is going to be the drawback to Americans booming the bee-business in Cuba—more so than any thing else, for the few who are there in the swim are going to be troubled so much with beginners' questions that their answers will not always be as kind and plentiful as Mr. Poppleton's were to me. Mr. P. forgot to mention the best trait that I found in the bellflower honey of Cuba, and that is its eating *quantity*. I say "quantity," for the more or the longer a fellow eats it the better he likes it; so when you sell to a customer you're sure of selling to him again, as the Cuban "campanilla" (or bellflower) honey is something fine—too nice, I think, to be compared with basswood honey; for if it is like Texas basswood honey, and you sell a man a five-gallon can of it, you are not apt to sell him any more—not inside of three years.

But all the honey produced in Cuba is not so fine. The honey from royal palm is the bee-keeper's standby, as it blooms every day in the year, and yields a solid stream of honey the year round, sufficient to keep bees booming, except during the 90 days it rains; and as it rains sometimes the full 90 days, without missing a day, the palm honey is washed out so clean and so often that black bees starve by the wholesale in September and October unless fed plentifully when stores run out. I say "plentifully," because it takes lots of feed to keep up eight or ten frames of brood together with a big swarm of bees. But the palm makes up for lost time in November and December by yielding several supers of thick dark honey, about the color of sorghum syrup, with a twang to it that always shows it to be pure Cuban honey in flavor. I mention this, for Mr. Fred Craycraft told me about extracting 700 gallons of pure sugar-cane honey, gathered by the bees from the burnt cane-fields during the first year of the war, the cane being burned sufficiently to kill it. After being killed it cracked open, and, of course, the juice ran out and candied, and the dews and showers melted the candy into molasses, so the bee had nothing to do but bring in the pure cane syrup; and pure it must have been, for the buyers only laughed at Mr. Craycraft when he offered it for sale as honey.

Mr. Poppleton, in closing his valuable article on Cuban honey, says: "Should very many American bee-keepers set up business in Cuba I think Mr. Cogshall, as well as a good many more of us, will find their rivalry a much more serious matter than we shall enjoy." The "seriousness" of competition from Cuba, in the way of honey, looked away off yonder to me, while rambling among the war ruins, and while observing the ropy, infallible evidence of foul brood, as something not very "serious;" and I am afraid I shall die of natural old age before very many Americans "enjoy" or luxuriate on cheap honey from Cuba. In the first place, Cuba is not a whale for size; and in the second place, as nearly as I could see and learn, there is not more than half of it that will do at all to keep bees on,

except as a side issue; and side-issue bee-keeping in the tropics, where web-worms crawl 12 months in the year, will never affect such men as Coggs shall nor O. O. Poppleton; for I suppose Mr. P. will be growing Florida oranges in Cuba, and raising honey as a side issue; for fruit is bound to win the day in Cuba.

Navasota, Tex., Jan. 7.

EXPERIMENTS WITH DRAWN FOUNDATION.

An Interesting Article.

BY PROF. C. P. GILLETTE.

[The following is a paper read at the last Colorado State Convention by the Professor of Entomology, C. P. Gillette, at the State Agricultural College. It was sent us in manuscript by Mr. F. L. Thompson, who suggests that it should have a wider circulation than it would have by being a part of the report.—ED.]

Last spring I obtained a quantity of drawn comb foundation from The A. I. Root Co., for the purpose of comparing its use in sections with the use of the ordinary thin foundation. In order to make a proper comparison the sections were filled half with drawn and half with plain foundation, the foundation extending about two-thirds of the way down in the section so that the lower third would be, in each case, all natural comb.

There was no question but that the bees went to work more freely upon the drawn foundation. Some of the colonies worked for several days upon the drawn foundation before beginning on the undrawn. They do not,

The sections on being removed from the hive were as white and beautiful as any, and I doubt if any but the most notional would detect an unpleasant flavor or thickness in the comb. But if the honey be extracted and the comb washed and examined, it will be noticed that the lower half of the cells, and the septum, are of an amber or beeswax color, quite in contrast to the exquisite whiteness of comb that has been made entirely by the bees.

I found that, after carefully removing the cells from the septum in natural comb, it would require an average of 18.8 square feet of the septum to weigh a pound. From similar computations I found that the septum of comb built from drawn artificial foundation required only 13 square feet to the pound. At the same time I found that the septum of the artificial drawn foundation, after the removal of the cells, would require 21.8 square feet to weigh a pound, which shows that the artificial septum, before it is worked, is lighter than the natural. This seemed to me to indicate very strongly that the bees, instead of thinning this foundation, really thickened it by adding to it.

To further test this point, I took samples of foundation of three different weights, one being a very heavy product of home manufacture obtained from Mr. Frank Rauchfuss; another was a medium-weight brood foundation, and the third was a good quality of very thin foundation for use in sections. In each case I carefully weighed accurately measured pieces of the foundation before the bees had touched it, and then similar pieces of the septum of comb built on each kind of foundation, and the following table shows the results:—

	Heavy Foundation.		Brood Foundation.		Thin Foundation.		Drawn Foundation.		Natural.
	Fdn.	Septum	Fdn.	Septum	Fdn.	Septum	Fdn.	Septum	
Weight per square inch	10.4 gr. 11.	7.8 gr.	8.8 gr.	4.7 gr.	4.1 gr	3.7 gr. 2.7	2.06 gr. 2.40	4.10 gr. 3.20 3.86	2.05 gr. 2.50 3.20
Average weight.....	10.7 "	7.8 "	8.8 "	4.7 "	4.1 "	3.2 "	2.23 "	3.72 "	2.58 "
Square feet in a pound..	4.5 "	6.2 "	5.5 "	10.3 "	11.9 "	15.2 "	21.8 "	13. "	18.8 "
Weight reduced.....	25 per cent.		46.6 per cent.		22 per cent.		Inc. 67 per cent.		

WEIGHTS OF FOUNDATION AND COMB SEPTA.

however, begin storing honey at once in the partly drawn artificial cells. They never fail to go over every part of the surface of the cell with their mandibles, so biting and roughening it as to render it more translucent. After the cells had been worked over, and before they had been drawn out further, the thickness was found to be reduced about $\frac{1}{16}$ inch, or, in round numbers, the whole thickness was reduced one-sixth.

Another advantage from the use of the drawn foundation was in the tendency to unite the sides quickly and completely to the section without leaving holes for passageways. Where there is a thin foundation only, this is often done, but the bees seem to be loath to tear down the comb cells for this purpose. It was also noticed that in sections having drawn foundation the combs were, on an average, built more strongly to the sections and with fewer passageways through the sides and corners.

The table shows very conclusively, as do the samples of foundation and comb septa that I here show, that in cases where heavy foundation, or even the thinnest of ordinary foundation, is used, the bees thin the foundation before storing honey upon it.

The added weight in cases of drawn foundation seems to be due largely to thickened deposits made upon the septum along some of the angles, and not to an even distribution of the added wax. These thickened deposits may be quite plainly seen by looking through the comb toward the light. These deposits are much more abundant in some pieces than in others, and just what their occasion may be I can not say. Perhaps the angles at the bottom of the cells are not just as the bee would make them, or perhaps there are other imperfections in the cell that the bees cover over. These deposits are absent in natural comb, and I find very few of them in comb built from or-

inary foundation. According to the weighings that I have made, the amount added is equal to about two-thirds the weight of the septum in natural comb, so the saving of wax from the use of the drawn foundation would not be as much as would at first seem.

On the whole I am pleased with the drawn foundation, and would heartily recommend its trial, at least, by the practical bee-keeper who wishes to obtain the largest possible crop of comb honey.

[In commenting on the above, Mr. Thompson adds the following.—ED.]

The samples of foundation and septa which Prof. Gillette passed around were arranged in pairs, each pair clamped at the ends between two pieces of section wood, clinched together with light nails. They illustrated very completely all the points which the lecturer made. In addition there were some sections containing uncapped and extracted comb built from drawn foundation, etc. One of these sections contained a starter of the heavy brood foundation mentioned, the lower edge of which was blackened by lampblack. This had been left but a short time with the bees, so that the cells were scarcely altered: but at the juncture of the foundation with the wood on both sides, and along the V grooves, even the bottom ones, were vivid inky lines, showing that the bees not only thin foundation, but also carry away the wax thus obtained and use it elsewhere.

In regard to the reason why the bees should deposit wax along the angles of drawn foundation, Mr. Aikin thought it might be because the bees always desire to first make the cell-base rounding. This they always do in building natural comb, and in thinning foundation, not making the three flat little surfaces appear in each base until afterward. The high side walls in drawn foundation keep them from going through the rounding-out process in the ordinary way, and so they approximate to it by depositing wax in the angles. Again, bees always make a thick line of wax at the *edge* of what they are working at, whether cell-bases or cell-walls; and thinning is not done unless the portions to be thinned can be got at from all sides. These are not just Mr. Aikin's words, but I think they represent his idea. He is also of the opinion that factory-made foundation is pressed too hard to be easily worked by the bees.

The point occurred to me, which Mr. Aikin agreed with me in thinking important, that a good supplementary experiment would be to make from natural comb an imitation of the artificial drawn foundation, by cutting off the cells on both sides at the proper depth, and putting this in sections; then after completed honey-comb has been built upon it, extract, remove cell-walls, wash, and weigh the septum, just as was done with the septum of drawn foundation after it had been worked by the bees; and compare the results with the septum of worked drawn foundation on the one hand and the septum of *once* built natural comb on the other. If it should prove no heavier than the latter, that would show that

the reason bees increase the weight of drawn foundation is in some way connected with its manufacture; but if it should show an increase in weight similar to that which takes place in the septum of drawn foundation, then it would show that there is no use in trying to make more perfect artificial comb, because perfection itself—natural comb—fails under those conditions. I suspect that the latter will be found to be the case, for we know already that bait combs are gobbier than those built while the honey is stored.

Prof. Gillette's table is also of interest in another way, for the "very heavy foundation" he refers to was made on my Rietsche press, and is a little heavier than I succeeded in getting it; and the medium brood foundation is Dadant's make, by the Weed process, and was quite fresh when the test was made. Of this, more later.

Denver, Col., Dec. 19, 1898.

[Mr. Weed replies:]

The fact that the drawn foundation had a thinner septum than natural comb, fully accounts for the thickening mentioned. I find that, where the base is as heavy as or heavier than natural comb, no such thickening takes place. Where the base of the cells is cut clear through, the patching is very noticeable. I don't think it is quite fair to test drawn foundation and ordinary foundation side by side. It is admitted that bees transfer wax from one comb to another, and I am positive that, in some cases, at least, the old style of foundation is the gainer through the proximity of the drawn foundation. Again, it is probable that it is natural for the bees to secrete a certain amount of wax in a honey flow; and where the two styles of foundation are side by side they might use the newly secreted wax upon the old style of foundation where it was needed more than upon the drawn foundation.

Regarding the difference in color, I find that, where wax is reworked by the bees, the yellow tinge entirely disappears; and it seems probable that a foundation with a thin base, and heavy wall, of moderate height (say $\frac{1}{8}$ -inch), will have every advantage that last season's drawn foundation possessed.

Medina, O.

E. B. WEED.

DRAWN FOUNDATION.

A Careful Examination of its Advantages.

BY L. STACHELHAUSEN.

IN GLEANINGS for Nov. 1 I find an editorial about your drawn foundation, and it seems you are willing to give up the manufacture of the same. I should be sorry for this, because I still think that this foundation has some advantages if used in the right way. I am the only one of your readers who reported favorably on it, and so I hope you will give me some space to defend my position.

You tell us that Mr. Niver and Mr. Cogshall found, during the buckwheat flow, that the bees draw out and fill the drawn foundation at about the same time as common found-

dation. I think that any bee-keeper of experience would expect this. It is my practice, and has been for many years, to bring two or three frames with full sheets of foundation, alternating with extracted combs, into my extracting-supers, for the main purpose of multiplying my store of extracting-combs. During a *fast and good honey-flow* the bees work out, fill, and cap these foundations in about the same time as the extracted combs. In a slow and moderate honey-flow they act quite differently. The extracted combs are used first, and the foundation is not used at all; then the cells of the combs next to the foundation are prolonged; and finally, when the bees need more cells, the foundation is drawn, and we have a comb with some honey in it, but only half as thick as a regular comb. If we fill a super with foundation only, the bees are slow in commencing the work in it, and sometimes fill all empty cells in the brood-chamber before they start to work on the foundation. To prevent this we give at least a few frames with drawn combs in the supers as bait-combs. Quite the same thing is true with section-supers. During a good honey-flow, when the bees have already commenced the work in the supers, I have found very little difference whether drawn combs, full sheets of foundation, or starters only were given.

The problem is, to induce the bees to work in the sections. For this purpose bait combs are recommended, and used with advantage. In many cases they are absolutely necessary; but they are not always at hand. For this purpose I think the drawn foundation with natural base even better than natural combs; but it seems you are asking of this foundation still more, and something that no natural comb ever fulfilled. If you are willing to manufacture a combination of drawn and common foundation, you will surely have the same experience; they will be filled with honey at the same time as common foundation, if placed side by side in the same super during a good honey-flow.

The reason why I think the drawn foundation better than drawn combs for bait-combs is as follows: It is a fact that the bees at once repair all empty combs from which the thickened edge is cut off; for instance, extracted combs. May be they deem these thin side-walls not strong enough for a foothold. Strong edges are built on the cell-walls. To do this the bees have to cluster on the combs; and this is what we expect from a bait-comb. The drawn foundation is, in fact, nothing else than a comb from which the strong edge is removed, and for this reason it is especially fit as a bait-comb. If you will read my article in GLEANINGS for July 15 you will see that I recommended this foundation for bait-combs only, and I foretold the experience of Mr. Niver and Mr. Coggs shall when I said that, under certain conditions, common foundation is drawn and used for storing honey at the same time that natural combs are used by the bees. Besides this, if these two gentlemen had filled the super with common foundation only, I am not quite sure whether the bees would have worked as soon as they did when

a few sections with drawn foundation were in this super. When they worked at once on all sections, it is no proof that the drawn foundation did not work as a bait.

I am fully convinced that we often use drawn combs when the bees would build out foundation without cost, and that we just as often use full sheets of foundation when the bees would build combs from starters in the same time, and would store the same amount of honey in them. It is just the same with drawn foundation. Its use can be of great advantage at proper circumstances, and under other conditions it may have no advantage over common foundation, and not even over starters.

So the experience of these gentlemen does not prove any thing against the drawn foundation; and if the manufacture of the same is not too difficult you surely should not give up something that, in my opinion, will prove to be a great benefit to the comb-honey producer.

Converse, Tex., Dec. 12, 1898.

[I submitted this manuscript to Mr. E. B. Weed, who, after reading the same, wrote this reply:]

Mr. Stachelhausen's article is evidently the result of careful and prolonged observation, and I agree with his conclusion that the value of foundation depends largely upon the conditions under which it is used. If the drawn foundation with a natural base had been on the market early last spring I feel confident we should have had plenty of favorable reports.

The experience of Mr. Vernon Burt is a case in point. I took him a number of sections filled with drawn foundation to test; but his first supers were already full. He willingly consented to put the new product side by side with ordinary foundation in the second supers, but said that, toward the latter part of a honey-flow, he had noticed that ordinary foundation was often as good as drawn combs. For the first super, however, he places a high value on the latter. As he had predicted in this case, both kinds of foundation were finished simultaneously, but he still agrees with Mr. Stachelhausen as to the value of drawn foundation early in the season. Mr. Danzenbaker ordered enough drawn foundation to fill a thousand sections, in time to use it for the first honey-flow last spring, and his report is very favorable indeed. In this case it was both begun and capped much sooner than ordinary foundation. Mr. Stachelhausen has noticed that drawn foundation is in some respects better than natural comb. I believe we can go a step farther, and do better yet. From my point of view the ideal foundation should have a base as thin as natural comb, and enough wax in the wall to materially assist the bees to construct the comb. We have had foundation-mills that would make foundation with a base almost as delicate as natural comb, and we have had mills that would make foundation one-fourth of an inch thick; but a heavy base has always gone with deep-cell foundation, so that it could not be used in the sections where it is most needed.

I expect to produce a foundation with deep cells and a thin base, and am confident that its advantages will at once be recognized.

E. B. WEED.

JAMAICA NOTES.

The Honey Flora of that Island; Drawbacks, etc.

BY H. G. BURNET.

We have had perfect weather, apiculturally, for the past year, and bees have done very well indeed where proper care has been exercised. Just now they are booming on logwood and "Christmas pop" bloom, both of which yield an abundant supply of fine-flavored light-colored honey, fully the equal of clover. Christmas pop is the bellflower of Cuba, from which such large yields are secured. We have it all over this island, and have the logwood also, which Cuba does not have,

On the dry plains a splendid quality of honey is obtained from the cashaw, a variety of acacia, which thrives only in dry locations. There is hardly a month in the year when we do not get more or less surplus. Of course, there are drawbacks. We have almost no local market, and have to ship to London; but honey properly put up and graded will net from 3 to 5 cents per pound, which will give very profitable returns to a "business apiculturist"—a *specialist*.

Toads are a great nuisance, and bees must be on stands at least two feet from the ground or the toads will get at them; and as our toads are of the Surinam variety—about the largest in the world—they can stow away an enormous number if they have free access. I have known them to travel at least three hundred feet and back in one night to an apiary; and sometimes very early in the morning, during bellflower bloom, I find them in front of the



A HONEY-POPCORN PAVILION. SEE EDITORIALS.

which is unexcelled as a source of honey, and never fails. The bellflower begins in November, and the bees build up good and strong, so that, when the logwood begins the latter part of December or early in January, it all goes for surplus. The bellflower is a white morning-glory, and yields an abundance of pollen as well as honey—so much so that the bees look as if they had rolled in flour, and it is comical to see them come into the hives. Fully half will bump against the hive and fall on the ground or grass, where they will stop long enough to give their eyes a few vigorous rubs to get the pollen out, then fly in all right. Bellflower and logwood last for about three months. One peculiarity of logwood is that it does not bloom at the same time in all parts of the island, and in some parts it blooms twice, so that migratory bee-keeping would be profitable.

hives to snap up the dusty-eyed workers that fall in the grass.

Apiculture is being boomed in the island lately, and the supply-men are reaping a harvest. "Root's goods" are the only kind imported. Some amateurs are going in quite heavily, and will possibly gain experience and lose money in proportion; but for the specialist I know of no better place in the world, all things considered.

At a recent apicultural fair Root's goods were shown; also Italian bees and queens; an extractor in operation, etc., all of which attracted a great deal of attention, and kept the genial exhibitor, Mr. Doidge, busy replying to the many queries from the people who crowded about. With all the bee-keepers we have we should have an organized society for the benefit of the fraternity.

Now, Uncle Amos, the next time you travel

we want you to come to Jamaica. You will see plenty of springs, water power, waterfalls, caves, irrigation works, magnificent scenery, gardens (we have Earliest berries, ripe now), and as many hospitable people as you ever found anywhere. Won't you come?

Linstead, Jamaica, Dec. 22, 1898.

[Thanks for your very kind invitation, friend B. I have been talking about Jamaica and the neighboring islands; but I confess my enthusiasm gets a damper when I think of being seasick, not only 48 hours, but almost a week. Perhaps I might go down to Florida by rail, and thus get around old Neptune a little. I should be very glad indeed to visit your tropical island.—A. I. R.]

THOSE HONEY-LEAFLETS.

When and Where Not an Aid in Selling Honey.

BY J. L. HYDE.

I see by GLEANINGS that you wish reports on the honey-leaflets. I have used them to some extent, but not as often as I shall in the future if I try to sell honey. I have distributed them with the honey sold, at people's houses, while selling honey from door to door, and by leaving them at the stores when I make a sale of honey. I can't say that I received many responses from those that were sent out with the honey; for if they liked my honey they would buy again; but if not, nothing that they would read or that I could say would induce them to buy any more. I know where I have left them, when on my first journey selling honey, the people that refused to buy at first would buy on my second trip. I can not say that the leaflets sold the honey, though; but it seems to me that, if you leave something with your name on while on your first journey, they would have more confidence in you when they see you the second time, whether they read all in the leaflet or not. In regard to leaving them when selling honey at the stores, I have but one report to make that would go to show that they did any good.

This one is a fish-dealer, and carries my honey put up in 1-lb. jars on his wagon while peddling fish. At first he was met by people who complained that it was cheaper to buy it without the jar, as somebody was selling 4 pounds for \$1.00 put up in some kind of a tin pail, taken right from the bees, while he sold mine for 20 cts. per pound with jar. He said that the one who had it put up in tin pails could sell his while mine would not sell, because it would seem to the one who bought it as if it had been "monkeyed" with; so I put him up some of my honey in three and four pound cans so that he might sell them for 65 and 75 cts. per can. He reported, a short time after, that, though he could not sell any honey in the cans, the scheme, together with distributing the leaflets, killed the other man's trade and boomed his own; and a while afterward he reported, while I was talking with him about his increase in his honey sales, that those leaflets were what started the honey going. He said he printed his own name on

them, which advertised his business as well. I think that the honey-leaflets are all right as an advertisement; but if something about how bees make honey could be added to it it would make the reading still more interesting, so that they would be more sought after, for very few people know how honey is made, and they are greatly interested when talking to them about it.

Providence, R. I.

THE DICKEL THEORY.

Selection from the Proceedings of the Wander-Versammlung of the German-Austrian and Hungarian Bee-keepers.

BY F. GREINER.

The convention was held in Salzburg, Austria, September 4-8, and about 300 bee-keepers attended. From the proceedings I select but two addresses, and can give these only in extract. Dr. Dzierzon, as the first speaker, gave his views and ideas about as follows:

We celebrate to-day the 43d Wander-Versammlung. Really it should be the 49th, for we organized in 1850, in the city of Arnstadt; but on account of three wars occurring, six years were passed by without holding a convention.

The bee-keeping industry has made more progress during these nearly fifty years than it had before in many centuries. Men holding opposite views, meeting one another face to face, soon found out the true state of things, although some wrongly conceived ideas and theories were uprooted only after long fierce battling. For instance, it was believed, even by Baron von Berlepsch, for a time, that the queen laid only the eggs for workers and queens, but not for the drones. Drone-laying workers were believed to attend to that.

Feb. 13, 1853, I received the first colony of Italian bees, and soon after, the matter was easily sifted to the satisfaction of everybody. In the following fall I sent two Italian queens to Berlepsch, and soon after that he had the satisfaction of seeing yellow drones emerge when there was no possibility but that the eggs that produced them must have been laid by the queen, for all worker-bees were black. The introduction of the Italian bee helped to prove, also, that the queen meets the drone outside of the hive. It helped to unravel other mysteries. It was not well understood that the queen should be able to determine the sex of her offspring. I discovered that drone eggs did not require the fertilizing influence of the spermatozoa, but would produce drones without. I then concluded that the laying of fertilized eggs (producing queen or workers) and the laying of unfertilized eggs (producing drone) was subject to the queen's will. Our noted scientists have assented to this theory. No doubts were expressed for many years till now by Dickel. He asks: "Where in all the world is there another such case where a mother can determine the sex of her offspring?" But what of that? Even if the queen should be the only exception in nature she does it, and therefore she has the ability. All of Dickel's experiments prove nothing. His whole theory is without foundation. I think it would be desirable that no more time be wasted with it.

According to the program, Dickel was not to speak till the next day. He then made his reply, which in substance was about as follows:

For many centuries the people in general, and especially the scientists, have been marveling over the mystery of how the sex of offspring is decided. Even the bee-keepers have tried their hand to solve this question; but it seems so far they have stood outside of or in opposition to the known laws of nature. Before I develop my new theory, allow me to briefly state the old, to which we have held:

"In 1851 Dr. Dzierzon reasoned, based upon his observations, that the mother-bee has the faculty of laying impregnated and unimpregnated eggs at will. From the first named, female and worker bees develop; from the latter, males or drones."

Indeed, it is beyond any doubt that eggs from laying workers, or unmated queens, that can not have received any spermatozoa, do produce drones, but this does not yet prove that, under normal conditions, drones are produced from unimpregnated eggs. However, something happened in 1855 that compelled all who were antagonistic to the Dzierzon theory to hold their peace. Prof. Siebold discovered, after careful microscopical examinations, that eggs taken from worker-cells contained sperm; eggs from drone-cells, not. Since there was no greater master to oppose Siebold, the matter has rested there, scarcely any objection having been raised since. But I acknowledge only one master, and that is penetrating observation—the true natural science.

It is sometimes said that nothing new or of importance has recently been offered in bee-science; but that is not quite true. For instance, who of the older scientists knew any thing about transferring eggs and larvæ? Well, with the help of these "kinks" I was enabled to prove what for a long time had been my conviction; viz., that a normal queen lays only impregnated eggs, and that it is the mission of the nurse-bees to decide whether queen, worker-bee, or drone is to be the outcome. You may imagine that a great many experiments had to be made before I found the desired proof. My greatest difficulty was to transfer eggs successfully. As last I did succeed, using for an instrument a needle bent at the point.

I ask you to see for yourself, and repeat the following experiment: Transfer perfectly fresh eggs from a drone comb to a worker comb, and give this to a colony that has been queenless long enough to have become somewhat apathetic. The bees will not accept transferred eggs, but tear them out. The development of these eggs will show that workers and queens may be produced from drone eggs.

Another experiment, still easier, is the following: Remove from a drone comb all larvæ, and replace with just hatched larvæ from a worker comb, and give the one thus prepared to a colony under the same conditions as before. You will then see queens and drones hatch from the impregnated or worker eggs, even after they had hatched out. Any one may make these experiments and convince himself.

If we, then, bring the proof that the male as well as the female individuals originate from the impregnated eggs, we add nothing to natural science. This has been known for a long time. It has been denied only by us bee keepers. Different, however, is it with the question, "What influence controls the sex of the offspring?" Scientists have held that all eggs are alike from the beginning, having the male and female rudimentary beginnings side and side, the act of coition deciding which of the two elements is to develop. Reasoning from the outcome of our experiments, what are we to say in this matter? Through Dzierzon we know that unfertilized eggs produce male offspring; and Berlepsch expressed this theory, "All eggs have from beginning the male tendency." We can now enlarge and perfect the theory by adding, "By the spermatozoa that each egg receives as it is being laid, it receives with it the female tendency, and both are then represented in equal strength." If you will repeat my experiments you will become convinced that the workers must and do decide in which direction the egg is to develop, one or the other remaining dormant. If we herewith bring the proof that not the act of coition decides the sex of offspring, but another factor, then we have brought out a new truth for which we shall receive due credit.

Although Dr. Miller said about the Dickel theory in substance, "We can afford to let them fight it out across the water; no use of our wasting our efforts," I will not criticise the doctor. However, to me this fight is exceedingly interesting; and, though I am not able to take an active part therein, I have followed it very closely, and the reader may excuse me if, in the foregoing, I have given at least a few glimpses of the battlefield.

Naples, N. Y.

[Some little time before this we received a communication from Dr. Miller, relating to the same theory. He briefly stated the Dzierzon position, and also that of Prof. Dickel. As both of these positions are a little more fully stated above, I omit that portion of the

doctor's article, giving only his conclusion; and this conclusion I am quite willing to adopt as my own.—ED.]

It would take many pages to give all the arguments that have been advanced in support of the theory, and also in rebuttal. It hardly seems wise that page after page of GLEANINGS should be occupied repeating what has been said in the German papers. If a considerable number of Germany's able investigators should embrace the new theory, it may then be time to give the reasons why we should become converts on this side. On the other hand, if it should turn out that Dzierzon is right in characterizing the new theory as rank nonsense, it will be well that so many pages have been saved for better use.

For some reason Germans are more rich in theories than Americans, and we owe them much in this regard; but it would hardly be profitable to keep fully informed as to all their theories. Some of them are no more profitable than an American theory that lived its life of several months in the year 1861, when the first volume of the *American Bee Journal* was published. E. Kirby, in order to avoid the acceptance of the theory of parthenogenesis, put forth the theory that the workers alight on the drones' backs when in flight, causing them to give off their semen, which the workers lick up and carry to their appropriate cells in their hives, for the purpose of propagating the young queens. This makes the queen all right to lay drone eggs, but she must meet the drone to prepare her for laying eggs of the other kind. That this theory should have received as much attention as it did, seems rather strange at the present day, for it was discussed in several numbers, occupying in all some eight pages.

A correspondent sends me a conundrum something after this fashion: Suppose a worker leaves a foul-broody colony and goes to the field, gathers a load of fresh honey, and on returning enters a wrong hive occupied by a healthy colony. Will that load of honey give foul brood to the healthy colony?

Without being too positive about it, I should say that the disease would not be thus given. Bees are economical of time and strength; and, if I am not mistaken, when a worker goes to the field it starts with an empty honey-sac, and when it returns from the field it has in its sac only the nectar it has gathered since leaving the hive.

There may be some danger that a young bee taking its first playspell might carry affected honey into a neighboring hive; but the great danger is that bees of a healthy colony may themselves carry the disease by robbing the diseased colony. A tenth of a drop of honey thus carried, if no attention is paid to the matter, may be enough to ruin a colony.

C. C. MILLER.

[I have had considerable experience along the line of the question asked by your correspondent. I found this to be true: That whenever a colony, perfectly healthy, faces in the same direction near another colony that was diseased, I was almost sure, sooner or later, to

find foul brood in the healthy stock. This happened so many times that we came to accept it as a matter of course that all colonies having entrances facing the same way, and near each other, would be either perfectly healthy or diseased. If one got it, the other was sure to get it later.

I do not know that this is a direct answer to your correspondent's question, but it certainly has a strong bearing on the point. It is true, that young bees might account for all the phenomena I have described; for, of course, these young chaps make a good many mistakes, and young bees are acceptable in any hive.—ED.]

TWO POINTS ON LARGE HIVES.

Strong Colonies at the end of Winter the ones to Get the Honey; Working Bees for the Harvest, and How to Get Them.

BY ADRIAN GETAZ.

Some time ago an invitation was extended to the contributors of GLEANINGS, requesting them to give their opinions on the subject of "expansion versus contraction." So far only the Dadants have responded, by an able contribution on the advantage of large hives and correspondingly large colonies. They have so well covered the subject that nothing needs to be added so far as the practical side of the question is concerned. There are, however, two points that are worth a careful investigation.

I think it is unanimously agreed (or practically so) that, by the time the main honey-flow comes, the brood-nest ought to be full of brood and honey, so that, when the flow comes, the honey would necessarily go into the sections. So far, so good; but is it sufficient for the best results? Not in my locality. With me the colonies that are the strongest at the beginning of the season or at the end of the winter are those which give the most surplus, regardless of the fact that those which were weak at the beginning may have their brood-nest just as full as the other when the flow comes.

That puzzled me a good while; but after I had thought the matter over and over, the thing appeared to me very simple and very natural. In order to get the largest surplus possible, it is necessary, not only that the brood-nest be full, but also that the number of the *field bees* in the hive should be as large as possible. How can that result be attained?

Suppose the honey-flow begins July 1st. The worker-bee emerges from the cell three weeks after the egg is laid. Two weeks after, she begins her field work. This field work lasts four weeks, and then she dies. These numbers are, of course, only approximate averages, but close enough to answer the purpose. It follows, then, that the oldest field bees in the hive July 1st are those that hatched from eggs deposited nine weeks before—that is, April 28th; and the youngest, those from eggs deposited five weeks before July 1st, or May 26th. So in order to have the largest

number of field bees July 1st it is necessary that the queen should lay her full capacity of eggs from April 28th to May 26th. This means practically a full brood-nest already, April 28th, and one of sufficient size at that, and also a strong colony. Can that be done with a weak colony? Evidently not. Let us now begin the problem at the other end.

We will suppose that the bees are taken out April 1st. For the first few days only a few eggs will be laid. Probably a week or so is practically lost. Three weeks will elapse before any brood emerges, and the old bees will be dying all that time. The bees emerging during the first week following will not more than make up for the number dead since the colony was taken out; so it will be fully five weeks before the colony will begin to increase over what it was at the start—that is, about May 5th.

Now, is it not plain enough that, unless we have strong colonies at the beginning, it is impossible to have a very strong force of field bees at the opening of the honey-flow?

And what does that foolish talk about "useless consumers" we hear so often amount to? No, sir; these "consumers" repay a good deal more than their board when the following spring comes.

In using large hives and large colonies it is absolutely necessary that swarming should be controlled. Unless this is done the large hives are a failure. If swarming occurs, neither the swarm nor the parent hive will be able to do more than regain its normal strength during that season, with all the chances that the process may be repeated the following year. In working for extracted honey it is easy to prevent swarming. All that is necessary is to have enough empty combs so that there will be ample room for the queen to lay in, and for storing the honey gathered. When this condition is fulfilled, only a very few swarms will issue, and these only in case of supersedure of queens. Even that could be prevented if the apiarist would take the trouble to renew the queens every two years.

In working for comb honey the case is a little different. By giving plenty of sections filled with foundation we can, under ordinary circumstances, obtain the same result as by giving empty combs, for it takes but little time for the bees to draw the foundation and get room to put in the honey coming from the field.

But it is not always so. In the first place the building of comb is done, in great part, during the night; and if we add too many supers the bees will not be able to maintain a temperature high enough in the supers to draw the foundation and complete the comb. This can be obviated to a great extent by outer cases and packing, inclosing not only the brood-nest but the supers, at least until the weather is warm enough to dispense with them. If, to economize the warmth, we give only a few sections, there will not be room enough to prevent the crowding of the brood-nest and the subsequent swarming.

But even with enough room and enough protection, in many localities the honey-flow

comes so suddenly and so abundantly that the brood-nest is necessarily clogged with honey, and swarming will ensue, at least with some colonies.

This, for years and years, was for me the *bete noire* of bee-keeping (Dr. Miller or R. L. Taylor can tell you the meaning of *bete noire*). But now I can control the swarming completely, and I have the choice between two (or, rather, three) different methods of doing it. The one I am going to advise is not the one I prefer, but it is on account of the peculiar conditions in which I am placed.

It is not necessary to prevent the actual swarming. The increase is what must be prevented; that is, we want to keep as many bees (or, rather, field bees) in each hive as we can possibly get. In the first place, have plenty of room—that is, of sections full of foundation—at least a few days before the honey-flow begins, and well protected by outer cases and packing, so as to insure plenty of room for the surplus, and sufficient warmth for comb-building during the night as well as during the day. Perhaps no swarms will issue, perhaps several. When a swarm issues, return it and kill or remove the queen. Put an entrance-guard before the hive, and let the young queens fight it out among themselves until only one is left, then remove the entrance-guard and let her out to mate. By that time the swarming-fever will be over.

The ordinary entrance-guard will not do. The drones in the hive will blockade it almost completely in trying to get out. I use queen-traps with a wire-cloth cover instead of tin. The light shining through the cloth attracts the drones in the upper story, and they come up almost at once, and are out of the way of the workers.

When the young queens emerge, swarming will be resumed; but the trap will prevent the queens from going with the swarms, and, of course, the swarms will return. In order to permit the young queens to go back to the hive it is necessary to remove one of the cones of the trap, or have a hole by the side of the cones. That hole can be provided with a slide, in order to close it when it is desired to catch the queen or the drones. In fact, all my traps are provided with such a hole and a wire-cloth cover. It will take but a few days to determine which queen will remain, for, when the swarm is out, the cells are left almost unguarded, and the young queens will come out during that time and settle the question, and also succeed in destroying the remaining cells.

What has become of the "admiration society"? The way the brethren have lately been whacking each other does not show very much admiration.

Knoxville, Tenn., Dec. 28, 1898.

[Yes, indeed, there is a difference between strong colonies. One may be numerically as strong as another; but one may contain much the larger force of bees of the right age to gather honey. In this question of large or small hives we should not, of course, overlook the matter of a large force of bees of the right

age to gather honey. Doolittle has called attention to the importance of this, over and over again; and I do not know but we ought to reiterate it on the housetops.

Your practical conclusion, then, if I understand you, is this: That colonies should be as strong as possible the *fall before*; and to make up for a certain necessary loss in each colony in wintering, brood-rearing should begin early in the spring; and, if your figures are correct, the brood nest should be full by the 28th of April. Unfortunately that is too early for most northern States. We usually can not get our hives full much before the 15th of May here. As that would not leave us time enough to get the requisite force of working bees, I see no other way than that the colony should be very strong the fall before.

If the main honey-flow for most of the northern States would come on about the middle of July or the first of August, the problem of strong colonies would be more simple.

Your method of preventing swarming, or, rather, of keeping down increase, struck me very favorably at first. On second thought I fell to wondering if colonies with young queens *trying* to swarm, and being balked, wouldn't be inclined to fritter away valuable time. I have tried controlling swarming with perforated zinc; and my experience is that, when a colony is thwarted in its effort to carry out its natural instincts, it will sulk right in the midst of a honey-flow.—ED.]

LARGE HIVES.

Answer to the Editor's Question; Large Hives Necessary for Full Capacity of Good Queens.

BY C. P. DADANT.

Mr. Editor:—In your last comments you ask me whether I think the eight-frame hive is large enough to accommodate the breeding capacity of the average good queen. Emphatically I will say *no*. Neither do I think that the bee-keeper who makes any tests at all, no matter who he is or where he is, would answer the question in any other way. My experience is that about one-third of the queens are crowded in a ten frame brood-chamber, and that not over one-tenth of the colonies can be sufficiently accommodated with breeding-room in an eight-frame hive; while perhaps only two or three per cent of the healthy queens would find this hive too large.

Perhaps many people will disagree with me, who have never used any thing larger than an eight-frame hive, because they judge of the possible strength of a colony by the experience that one may get with such a hive. I beg leave to say that it is next to impossible to judge fairly of this question without first giving a trial to large brood-chambers the year round. It is useless to expect as populous a colony for either spring, summer, or winter, on an average, in a small hive, as in a large one. One might as well expect as large a colt from a pony as from a Norman mare. A greater cluster, a larger space, and a greater amount

of stores are bound to produce, with a queen to match, a more satisfactory colony.

There is one item which we have not considered. I have often heard it said that the size of the hive was a question of locality. Whether there is a point in this remains to be tested. It is quite possible that, in countries where the winter changes suddenly, and in a very few days to summer, the prolificness of queens may have but little chance of becoming fully developed. If such were the case it would indicate that northern countries could better adopt small hives than southern latitudes. But in my mind this is debatable. A strong large colony, wintered in a cellar, ever so far north, if safely wintered, ought to be able to develop the prolificness of its queen within a very short time; and as it takes only 22 days for the worker bee to hatch, a space of two or three months would be much more than ample to repopulate a hive to its utmost. Are there very many localities where the height of the honey-flow does not last beyond 60 to 90 days after the opening of spring.

I thank you for your kind words on my arguments. I have really said more on this subject than I expected, and I shall be very glad if the subject proves of any future use to the bee-keeping public at large. I can assure you, however, that, in any case, we are with the large hives ourselves, to stay.

One word aside from the subject of bee culture. I see on page 11 that you mention the question of government ownership of railroads. That has been one of my hobbies for a long time. Don't understand me as being one of those cranky paternalists who expect the government to take possession of every thing, and even grow our wheat for us, but I do believe that the only solution of the transportation question, which is now agitating the whole country, and the big centers more than the rest, lies in the *management* of public services by the public. We are daily brought to see that the transportation companies become more and more of a power, more and more of a tax, and there is no possible solution except the managing of the railroads, of the telegraphs, and of the telephones, by the same straight, economical, and wise method as that of the mail service. But we must first destroy the spoils system, or run the risk of seeing our beloved republic become corrupt, and sink, much in the way that the Greek and Roman republics did in past centuries.

[I indorse every word of the foregoing, even to the matter of government control of railroads; but this latter question is not debatable in GLEANINGS, for such questions should be discussed in papers devoted to those subjects.—ED.]

E. C. M., Mass.—There is no reason why you can not keep bees near the sea. If you have had unusual loss it must be due to other causes than the weather; but when bees are kept near bodies of water they should be protected thoroughly from prevailing winds, either winter or summer.

RAMBLE 160.

Scott Valley; Among the Miners.

BY RAMBLER.

Scott Valley and its outlying arms, one of which is Oro Fino, is eminently a little world in itself. A rugged divide known as Indian Hill separates it from the conveniences of a railroad and modern civilization, and all supplies from the outside world have to be freighted over said divide in those great wagons and by many teams.

The alfalfa hay grown here is all fed out to the stock in the valley. If there are not cattle and horses enough in the valley to consume it they are driven in from other portions of the State, for it is cheaper to drive the cattle to the feed than to freight the hay to the cattle outside. The farmers grow their own wheat, and it is ground in their own roller mills at Fort Jones or at Etna.

The butter and cheese produced in the valley are largely consumed there, for the miners on every mountain stream are not producers of food, but their hard labor makes them large consumers, and a large amount of their shining metal gets indirectly into the hands of the farmer.

It is hardly possible that a railroad will ever be built into the valley, for it is not large enough to produce a surplus of either population or products to sustain one; furthermore, the farmers are content with things as they are, and do not want a railroad; and, though they talk hard times, there are no people with whom I have come in contact who are so exempt from hard times.

In religious matters the people are in what might be termed a primitive backwoods condition. This is especially the case in Oro Fino. There is a little church, but no regular pastor. The preaching is given by ministers from Fort Jones or Etna. When I went there in April the services were held at three o'clock P. M., but the baseball game which came off every Sunday afternoon at the same hour so depleted the audience that the services were held during the rest of the baseball season on a weekday evening.

Dancing seemed to be the chief amusement of the young and middle aged, and a fine new dancing-hall was built during my sojourn, and the floor was kept well warmed with tripping feet.

The disregard for the Sabbath might come from the way the mines are run, for there is no Sabbath in a mine. The hydraulic giant is washing down the hillside night and day and every day of the seven; or if it is a quartz mill the stamps keep up their clamor in like manner.

This example set by the mines seemed to be contagious; and the work on the ranch, though eased up a little, goes right along with more or less vigor. On due occasions, however, these people are generous, even to prodigality, and we might easily scare up a Bret Harte angel in any of these mining camps. Another redeeming feature with the Oro Fino people is the absence of the saloon. Toppers

have to go to Fort Jones for their liquidation. So much, then, for Scott Valley and its people. Continuing the theme of bee-keeping I will call attention to the various bee-keepers in the valley, and their methods of management.

Jake Lewis, about a mile north of us, owned an apiary of about sixty colonies, all in Harbison hives. In early days, when Oro Fino was a more numerously populated town, he gathered the golden coin by fiddling for the miners; and instead of spending it, as many such men do, at the saloon or card table, he hoarded it, and now in his old age owns a large and fertile ranch. Uncle Jake had also, in his younger days, been a famous bear-hunter. Scores of bears and deer have fallen before his trusty rifle.

His method of securing honey was in those old-fashioned twelve-pound boxes. They were put on the hives early in the season, and taken off in the fall. As there was no glass in the ends of the boxes, whereby their interior condition could be examined, the fullness of the box was determined by rapping upon it with the knuckles. If it gave the proper sound it was removed.

Mr. Moxley, ex-sheriff of the county, and a wealthy farmer, also had a small apiary, with Harbison hives, and managed them in the same old-fashioned way, with the exception that he depended upon some outside aid to remove the honey. I had the pleasure of aiding him, and learned how to find a full box by the rapping method.

There were several other bee-keepers who managed their bees in this primitive way; and when I first took up my line of work in the valley I feared that so many bees in the immediate vicinity might make our honey-yield somewhat less; but I find that bees managed in that manner are not much hindrance. The bees were not worked to their highest capacity in honey production. They fill their boxes early, and then swarm and loaf on the hives. Many swarms escape to the woods; they are in evidence in many trees. One of Uncle Jake's sons has developed into a bee-hunter, and has found and put his mark on over thirty bee-trees in the vicinity. The bee keeper who works his bees according to modern methods is the only one to fear in such a field. We had such bee-keepers in the valley. Well up at the south end, and out of range of our bees, I found Mr. Charles Oltman. Sixteen miles intervened between us; and upon my first visit to his apiary, about May 1, I found his bees at work in sections while the Levering bees were not making a living. The reason for this prosperity, I found, came from an abundance of wild-cherry, willows, and locust, which were not so plentiful in our end of the valley. Mr. Oltman commenced the season with 140 colonies and increased to 160. His enthusiasm, however, for early honey was considerably subdued; for, during the interval between the blooming of these plants and alfalfa, there came a cool frosty term, and the bees consumed all of their early honey. Mr. Oltman is not discouraged over these little circumstances, but will enlarge his business

another year by starting another apiary. His bees were in the L. hive, and, having heard much about large hives, he constructed a few having 16 frames. He seemed somewhat disgusted with the jumbos, from the fact the bees swarmed from them before they had filled all the frames.

Mr. Oltman is an enthusiastic gardener, and supplies the people far and near with his products from soil and hive. He is, furthermore, a good-looking bachelor, quite popular with the ladies, and is bound to be successful.

E. G. Gerbrich, at Fort Jones, in another portion of the valley, is another bee-keeper who will make his mark in honey production.

One bright Sunday morning I was sitting in the cabin door, when, slowly approaching across the lawn, I saw a young man and feeble old woman. He was tenderly supporting her upon his arm, restraining his energetic pace, and patiently conforming to her slow motion. I arose as they approached, and he introduced himself and then introduced his mother.

I immediately felt a deep respect for Mr. Gerbrich; for, of all the beautiful things told by tongue or pen, there is none more beautiful than the story of reciprocal love between parent and child; and here before me was a scene that angels love.

Mr. Gerbrich came to seek information respecting some points in bee culture, and Mr. Levering and I tried to give the information sought. The gentleman was something of an itinerant peddler through the scattered towns of California and Oregon; and after obtaining this, his first honey crop, he proposed to take honey with his other articles in trade, and in this way work up a home trade. He afterward told me that, had he depended upon honey alone, he could not have paid expenses. Honey, by most people, is considered a luxury, and only a small quantity is purchased at a time. He could, however, dispose of it to good advantage in connection with his other goods.

In one of the side canyons I found bee-keeper N. J. Mallow. He is the owner of about 100 colonies of bees in four apiaries. These are, of course, mere nucleus apiaries, which he hopes to increase to a hundred in each. He makes his calculations, however, with the proviso that we always used back east—I will do thus and so if they winter well. A burnt child dreads the fire, and Mr. M. has had the experience of losing 89 colonies out of 90, and that proves that the wintering in Northern California is attended with disaster.

I have before stated that there is much honey-dew in this portion of California, and it seems to be more plentiful the further we penetrate into the mountains. Mr. Mallow gave me the information that the honey-dew found on the oak in the spring was whiter in quality than alfalfa honey, and of good quality, and will not granulate, even if kept two years. The honey-dew that is gathered in the fall is not so good, and I am inclined to think that his great loss of bees previously mentioned, was owing to too much of this kind of honey. The honey-dew in these mountain regions is so plentiful sometimes that hunters, in going

through a thicket, have their clothing thoroughly smeared and sticky from it; and it seems that bees work upon it with avidity when they are located far enough up the canyons to find it. Mr. Mallow uses the L. hive and system of management, and his honey-yields range all the way from 80 to 200 lbs. per colony of extracted honey. He sells all of his honey in the home market, delivering it to all towns and mining-camps within a radius of 25 miles. He is in accord with Mr. Doolittle about painting hives, and thinks his bees winter better where they are unpainted. The bees that gather honey in these apiaries are of the black race, and Mr. M. thinks they are good enough.



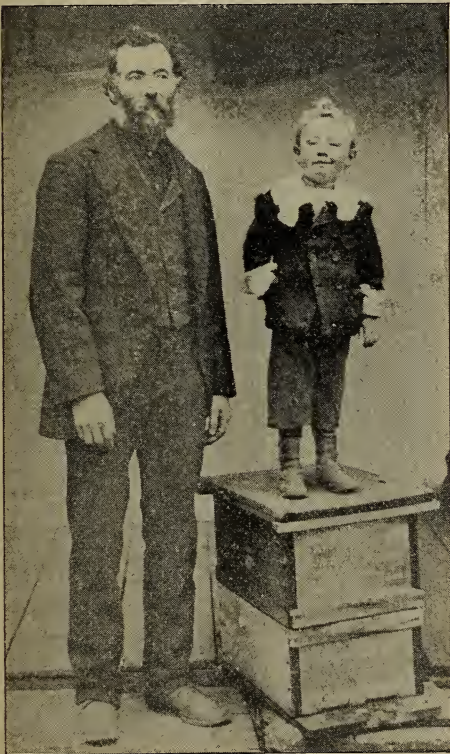
FROM EARLY SPRING TO THE HONEY-FLOW.

Question.—As it will soon be time to get the bees out of the cellar and commence active operations looking toward the honey-harvest, will you please tell us in your department in GLEANINGS what should be done from early spring to the first flow of nectar which gives a surplus? This flow is usually from white clover in this flow.

Answer.—As our questioner leads us to infer that he winters his bees in the cellar I will speak of setting from the cellar first. I follow a different plan in setting the bees out from what most apiarists do; and after trying all the plans for years which have been given I like this much better than any other:

Beginning with the first day in which bees which are outdoors gather any pollen, I commence at about 3 p. m. (if the mercury stands as high as 55 to 60° in the shade) to set out part of them, say from ten to fifteen colonies as the case may be, scattering them about the yard so that they will be as far apart as possible, and yet be within the limit of what space I wish the yard to occupy. This is done so that I need keep no track of where they formerly stood, and yet not have any mixing of bees, as would be the case were all set out at once or near together. Were all set out together, as most apiarists do this work, there will be more or less of colonies mixing up, unless each colony is set on the same stand they occupied the fall previous. To so set them requires a great deal of extra work, numbering hives, stands, etc., which is quite an inconvenience, and even then does not prevent some colonies getting far more than their share of bees.

To set out, I place my spring wheelbarrow and lighted smoker near the door of the beecellar, when I carefully open the door, quickly step in, and take the hive nearest the door, placing it on the wheelbarrow, when the door is immediately shut again. The bees in the hive now begin to realize that their long winter nap is at an end, and, if I took no precautions, they would be out of the hive and in the air, losing their home and stinging fearfully. To avoid this I now blow four or five puffs of smoke in at the entrance to keep them quiet, when the entrance is closed by laying a square stick in front of it, when the hive is wheeled and placed on the stand it is to occupy. The stick is now taken from the entrance, and the bees allowed to fly. This they will do as leisurely as they would had they not been disturbed at all, while, had not the smoke been given, they would have all piled out of the hive with a rush. This going out slowly is a great advantage to them in marking their location and repelling robbers. The next pleasant day more are set out in the same way, and at about the same time, scattering them about as before,



N. J. MALLOW AND SON.

Mr. M. has a fine ranch, and is thoroughly anchored to it with a family of wife and eight children. Huber is the name of the youngest, and I have not the least doubt that he will follow in the footsteps of his worthy father. I herewith present a picture of father and son.

H. S. M., N. Y.—The best way to make candy for bees is to mix sugar and honey into a stiff dough. Allow it to stand in a warm room for a day or so, and then mix in more sugar. These lumps of dough can be put on top of the frames for winter.

but paying no attention as to how near they come to those already out, for they are liable to mix only with those set out at the same time. I sometimes set out about the same number in the morning of a pleasant day, beginning to carry out as soon as the mercury reaches 45°, because, in this case, the bees must get through their thickest flight before those already out become very active, or else there is danger from robbing. In fact, those set out in the morning are much more liable to be robbed at best, for at this season of the year, on the days of the first flights of bees, they are always seeking for some weak colony to rob, because there is no nectar coming in from the fields; and bees having their first flight in the spring are not in condition to defend themselves from robbers, and for this reason I set out the most of them in the afternoon. Again, by this plan all the fatigue attending this work is overcome, as well as the mixing, keeping a record of where each hive stood, robbing, etc. As soon as set out, the next work is to see that all have plenty of stores; and if in a tight-bottomed hive, clean off the bottom-boards. As I use loose bottom-boards a clean bottom-board is placed on the wheelbarrow to set the hive on, so I do not have to disturb the bees afterward on this account. To find out about the honey or stores, the first cool morning go to the hive, take off the cover, and carefully raise the quilt or honey-board, and look for sealed honey along the top-bars of the frames. If plenty is seen they are all right till they are to be carefully looked after three weeks later. If little or none is seen, they must be fed; for if we are to reap good results from our bees they must have plenty of stores at this time of the year to encourage brood-rearing.

For feed at this time I prefer combs of sealed honey set in next the cluster, to any thing else. If none such can be had, we must feed sugar syrup, or liquid honey if we have it; but the feeding of liquid sweets thus early in the season entices many bees out to perish in unfavorable weather, and tends to promote robbing beyond any thing else. Three weeks later the hives are to be opened generally for the first time (unless we have some good cause for opening them before), the goodness of the queen looked after, the amount of stores on hand, and the brood-nest reversed, by placing the two center frames of brood on the outside and the outside ones in the center. By so doing a gain is made, as all the older brood is in the central combs, which are generally filled nearly to the outside of the frames, while only small patches of eggs and larvæ are in the outer ones. This reversion causes the now inside frames to be filled entirely with brood in the shortest space of time, while there is little danger of chilling the brood in this way. At this time we should see to it that each colony has plenty of stores to last two or more weeks, for at no time should the bees feel that they must economize in honey, if brood-rearing is to go on rapidly, which it now must if we are to secure a good harvest of white honey.

In about ten days a frame of empty comb is to be inserted in the center of the brood-nest,

or, better still, a frame of honey which has previously had the sealing to the cells broken. By removing this honey the bees are greatly stimulated, and brood-rearing accelerated. In eight or ten days more the brood-nest is again reversed, when, if all has worked well, there will be brood in all but the two outside combs, and generally some in these; but if not, there soon will be, owing to the full sheets of brood coming next to them. If honey is now coming in, the surplus arrangement is to be put on in a day or two; and it is better to put it on in a week or so, in any event. This, in brief, is my plan of management from the time of the setting of the bees out of the cellar till the honey-flow from clover. Now, if all of this is done properly and you have allowed your bees to care for themselves heretofore, you may want to get a "double gait" on yourself, as the darky wanted to catch the mule. A physician and his friend were standing on the street corner of a Virginia town when their attention was amusingly called toward an old darky belaboring the flanks of a mule in a vain persuasion to make him move on. At last the doctor was appealed to. "Say, boss, I'll give yo' five dollahs ef yo'll make dis hyer mule go."

With a sly wink, the physician opened his case and took out his hypodermic syringe, filled the needle with an acid, and sent it into the hindquarters of the mule. The effect was magical. With a wild plunge the mule went tearing down the street, with the darky after him, the bystanders roaring with laughter. A short time afterward the darky, dust-covered, approached again.

"Say, boss, how much was de wuff of dat stuff yo' done squit in dat mule?"

"Oh!" said the doctor, "about ten cents."

Down went the darky's hands in his jean pockets. He fished out two dimes.

"Hyeh, boss, am twenty cents. I wish yo'd squit twice as much of dat stuff into me, 'case I'se bound to catch dat mule."



SNOW OVER ENTRANCES; CLIPPING.

1. How long may snow cover the hive-entrance without injury to the bees?

2. What advantage is obtained by clipping a queen? Could not the attendant, who must be present to assist the flightless queen, just as easily handle the swarm and queen settled naturally together?

A. W. CARSON.

Joplin, Mo.

[I do not know how long the entrance may be covered with snow. I know only this, that in our locality we never think of uncovering the entrances, and we have had the hives covered almost entirely for six weeks at a time. I should not be afraid to leave hives under the snow all winter. An occasional colony may be lost by snow melting and running into the

entrance and freezing, and that would be all. A colony in a double-walled hive, well packed, hive completely covered with snow, has all the ideal conditions for successful wintering outdoors.

2. Yes, the same attendant who takes care of the swarm can also look after the queen; but when a queen's wing is clipped it saves from a half to two-thirds of the labor of hiving swarms. When she is allowed to have her wings, and go with the bees, several things are liable to happen: First, bees, queen, and all absconding; second, the swarm clustering on some high limb; third, swarm with a queen circling about for a half or a whole hour, giving their owner a wild-goose chase.

The great advantage in having a clipped queen is this: A swarm goes forth, but the queen goes no further than a foot or two from the entrance. As soon as the bees discover they have no mother they will return to find her, which, if caged, is placed in front of another hive now on the old stand. The super that was on the old hive should be placed on the new one. The bees and queen enter the hive and begin work. There is no climbing, no chasing with spray-pump, and the work is performed easily and comfortably without excitement or worry.—ED.]

A PLEA FOR SEPARATORS TO REACH TO THE TOPS OF THE SECTIONS.

Mr. Editor:—From a Straw on page 870 it appears that Mr. Gathright, Dr. Miller, and yourself agree pretty well that separators should come $\frac{1}{4}$ inch below the tops of sections; and the editor adds, "Our fences for 1899 will be narrow enough to allow this space above and below." Additional weight is given to that Straw by the fact that the *American Bee Journal* reproduces it. Well, after all the weight and added weight given to that Straw, it appears to me that it should have a qualification go with it. By your permission, Mr. Editor, I will say that separators between sections having insets on the sections, or otherwise, of $\frac{1}{8}$ -inch only, may possibly work all right according to the arrangements in that Straw; but with those sections having $\frac{1}{4}$ -inch inset the separators must come to the tops of the sections, or the * sections, as a rule, will be marred more or less with bulge or burr-comb, or both—that is, provided the bees are crowded sufficiently to secure well-filled and well-finished sections. But, what is a well-filled and well-finished section? There may be a world of difference of opinion on that question. My answer is, sections that are filled and capped against the wood nearly all the way around. Let's look at it for a short time. With one super placed upon another, both filled with sections having a $\frac{1}{4}$ -inch inset, and separators $\frac{1}{4}$ inch below the tops of the sections, there will be spaces $\frac{1}{2}$ inch \times $\frac{1}{8}$ inch \times 4 inches; or if the separators are $\frac{1}{4}$ inch above the bottoms of the sections there will be spaces $\frac{1}{8}$ inch \times $\frac{1}{4}$ inch \times 4 inches. Now, Mr. Editor, I want to say that, in almost all my experi-

ence, I have found that, when bees are crowded for room for stores, they will not fail to occupy such inviting spaces with comb and honey.

The troublesome experience I have had in that line has taught me a lesson that I am willing to impart to others at a much cheaper rate than it cost me.

Yes, I am aware that some few colonies will respect such arrangements; but they are the rare exceptions. Of course, such wide separators must have some sort of passageways through them.

S. T. PETTIT.

Belmont, Ont., Can., Dec. 20, 1898.

MORE ABOUT THE HYDE-SCHOLL SEPARATORS; REPLY TO CRITICISMS.

Mr. Root:—I believe that, in your criticisms of our separators, you overlooked some very important points. The main point is the greater free communication offered in the fence separator. It is claimed that this object is the one in view. If so you clearly see we have a greater amount of communication in our separators, also a better filling of the sections clear out to the wood; for where there is a cleat on the fence we have an opening in our separators. Thus you see it will not only give fuller sections but a larger amount of honey per colony; therefore this will overcome your objection of greater cost, ten times over. Even granting that the extra cost was 5 cts. per super, we claim that colonies where our separators are used will produce at least one-fourth more honey—at least, that is our experience. If so, then does not the extra cost sink into insignificance in comparison with the larger yield? Then, too, I think your criticisms of their frailty a little too strong. I can't help believing they are no worse to break up, etc., than the fence, because they come in contact only with the sections at the corners; but to those who wish something stronger I will say that The A. I. Root Co. will make these separators of tin also, as well as of wood; and when you get a tin separator you have one for years. Don't think, friends, that there is a patent on these separators. They are free to all.

H. H. HYDE.

Hutto, Tex., Dec. 30, 1898.

WOOD-ZINC VS. PLAIN SHEET-ZINC HONEY-BOARDS.

By the way, that man Martin you have rambling over the country, telling big yarns, speaking of queen-excluding honey-boards, says in Nov. 15th GLEANINGS, "I make the wood-zinc board, for they are infinitely better" [my! what a term—*infinitely* better!] "and more durable than the plain zinc, for they do not get out of shape and into innumerable twists." Why isn't the man a little more modest, and say, "To me they seem much superior to the plain zinc boards"? I have been using them ten years; have 700 of them, and, after trying the wood-zinc, I decide that I would not take them as a gift, and be compelled to use them.

Yes, "get into innumerable twists" like a rubber hose-pipe, so you can never get them

*The term "section" properly applies to both the wood and the honey. The former is a section of wood and the latter is a section of honey.

straight. I never think of it as a trouble. I simply take hold of the end or corner of the zinc as I would a sheet of paper or a duck cloth on top of my hive, and peel it off—never a snap to jar the bees, nor care to prevent breaking the wooden frame. If curved, turn the convex side up, and the super set on straightens it out. My ten-year-old zincs are as good as my two-year-old ones.

Newhall, Cal.

R. WILKIN.

UNFAIR COMPARISONS; HONEY IN SQUARE VS. TALL SECTIONS.

Figs. 10 and 11, on page 920 of GLEANINGS, are not honest diagraphical or pictorial comparisons of the objects represented. Looking at page 920, no doubt every person would unhesitatingly pronounce in favor of Fig. 11; but the appearance is deceptive. The Danzenbaker sections are given in your catalog as 4x5 inches, and you give four of them the whole width of the page, while four of the 4¼-inch sections have a margin on either side.

Then, speaking of these latter, you say that you had to hunt long and hard for them. Fig. 11 you do not mention there; they seem to be there to speak for themselves.

I have had slight opportunity to test the plain sections, on account of a poor honey season; but from my limited observation I fail to see the great promise of superiority. Still, time may decide that point.

H. O. VASSMER.

Excelsior Springs, Mo., Dec. 22.

[It may appear to you, friend V., that I meant to compare the two lots of honey, placing those in the old style at a disadvantage. That was not my intention. The two engravings were made months apart, and I had no thought, originally, of placing the two side by side. I would not have done so when I did had I not had a little extra room, and used it by inserting the cut shown in Fig. 11, for you will see no reference to it in the reading-matter on the same page or the next one. Of course, it is not fair to compare a 4 x 5 section with a 4¼, disparaging either; and if you will read carefully again what I said you will see that I did not do so. In referring to the honey in the old-style section I did say this: That it would "compare very favorably with any I have ever seen in plain sections"—a general statement; and on page 932, in speaking of the two lots of honey on the same page, I said that it (honey in old-style sections) "looks as nice as the other." So far as the actual specimens there shown are concerned, I plainly stated that one was as good as the other.

But perhaps you object to my statement (p. 932) wherein I said that Fig. 10 was better than the average of fancy in the old styles, and that Fig. 11 was very close to the common run of fancy in plain sections. If this is what you object to, then it is simply a matter of opinion or taste. I gave my opinion, right or wrong.

With regard to your observations on plain sections you admit that your experience is limited. If you bought honey in ton lots, as we do, I think you would have reason to be-

lieve that plain-section honey is prettier-looking than the other.

Of course, it is to be assumed that some of us who are enthusiastic in regard to these new things may paint them in too bright colors; and it is assumed, also, that those who are more conservative, and inclined to cling to the old, will *not* be apt to give the new goods all the credit rightly their due.—ED]

A PLEA FOR WIDE FRAMES AS AGAINST SUPERS.

I have been a well-pleased reader of your paper for some years, and especially A. I. R.'s writings. For more than a year I have wanted to ask why the old-style wide frames for sections were not the best of anything for sections. I have used both them and Simplicity T-tin supers, and, to my notion, the wide frames are far ahead of the supers. I can get more and better filled and cleaner sections with them. If my bees winter well I shall want two or three hundred of them for another year (I have now about 450 of them), unless I find something better, which I very much doubt. Of course I want the best, and my opportunity for learning it is confined almost to the pages of GLEANINGS. It seems to me I must be away behind the times, as I notice they are hardly ever mentioned in your papers; and when they are, it is with such a hang-dog, disgusted, out-of-date expression that I always want to ask why. I can not find them mentioned in your price list either.

Now, Mr. Editor, an answer to the above in your paper, or an article on the subject, would be very useful to me and, I think, of much value to a great many of your readers.

ALFRED ATHERTON.

Oramel, N. Y., Dec. 12, 1898.

[I am surprised that you prefer wide frames to T supers. The former have been almost entirely discarded, and why? In the first place (for I am talking about double-tier eight-section wide frames) the sections are in two tiers. If you put a hive or hive-body on top, containing wide frames, you must either give them a whole set of 48 sections, two tiers, or else put in a few wide frames and fill up the space with dummies. Objection No. 1, then, is that, with wide frames, one must give too much room at a time. Objection 2. They are not as easily filled or emptied as the T super. The last named can be emptied *en masse*. Objection 3. Wide frames are difficult to get out of hive-bodies. When they are once glued together in the hive it is sometimes a big job to get them out, to say nothing about removing the sections afterward. Objection 4. Wide frames are not as easily cleared of bees as the T supers, and, moreover, they require the use of tin separators. Wooden ones may be used, but not satisfactorily. The only advantage they have is that one, and perhaps two, may be put down in the brood-nest; but discolored honey is liable to be the result; and then, as a rule, a colony should have at least all the space it can have in an eight-frame hive for breeding purposes.

We ourselves prefer a single tier topless wide

frame or section-holder arrangement to a T super.—ED.]

THICKNESS OF TOP-BARS FOR SHALLOW FRAMES.

How is foundation fastened to the shallow extracting-frames, as they have no comb-guides? Would it not be better to make their top-bars the same as for the full depth?

JOHN B. ADDISON.

Washougal, Wash., Dec. 17.

[We advise every one to wire all his frames. Shallow extracting-frames can be wired horizontally or perpendicularly, according to the taste of the bee-keeper; but horizontal wiring is simpler and just as good. When frames are wired, the matter of fastening foundation is a simple one, providing one horizontal wire is put near the top-bar. If for any reason one does not care to wire, he can use the Hambaugh roller, especially designed for fastening foundation to top-bars flat on the under side.

Why do we not make top-bars for shallow frames thick? For the reason that the frames are already shallow, and the thickness of the top-bar consumes too much of the relative space for the comb in the frame. In shallow frames the top-bars do not need to be as thick as with deep ones, for the reason there is less load for the bar to support, and hence little or no sagging. One object of a thick top-bar is to prevent sagging. In order to keep down burr-combs it is absolutely necessary to preserve bee-spaces. The shallow bar with the deep frame will sag, and consequently the bee-space will be enlarged just enough to encourage the building of burr-combs.—ED.]

SIZE AND CONSTRUCTION OF HIVES LARGELY A MATTER OF LOCALITY.

Once I thought I was satisfied that I had the best hive with a hanging frame, ten to a hive and eight to a hive. The frames were $11\frac{1}{2} \times 15$, or a square foot of comb. I used both sizes of these hives for 30 years. I like the ten-frame best, but seldom use more than eight combs in the time of gathering box honey. But for the past few years I have been using 100 or more hives with Hoffman frames, same size, only 2 inches lower, with equally good results. But they want more time and attention. I am also using 100 or more of the Quinby-Hetherington standing-frame hives, and I must say I do not wonder that so many differ in the size and kind of hive they use, for it depends on locality. It depends on whether we want extracted or box honey, or whether we want one all-purpose hive; and it depends very much on the amount of work and skillful attention we want to give our bees. What kind of hive is best for us to use? I should be glad to have uniform hives, but I fear we shall not get to this; but we should have uniform sections and shipping-cases for our honey. It would be to the interest of all. A hive is a good deal like a wagon. I once thought I wanted a spring wagon for all purposes to carry about 1500 lbs. I have found I was mistaken. I now use a wagon that will

carry 1000 lbs.; and the next wagon will carry 2000 lbs. or more. The 1500-lb. wagon was either too small or too large, and so it is with a hive. I feel that, to carry out all of my plans, I must have two sizes of brood-combs; but want the hives all to take the same kind of surplus clamps for box honey. As I use two clamps to cover a hive, I prefer a hive so nearly square that it can be used either way, or that only one half of a hive may be used for brood, and one clamp cover them when desired.

I can appreciate Dadant's writing about his *big hive*, and can indorse the most he says. *But I don't like his large frames.* I used them in the first frame hive I ever used. They winter well, and give strong swarms, etc.; but to handle the frames all day it wants a strong man; and they are bad combs to break down while moving over our rough roads on a wagon. I run my bees from a wagon or a sleigh down a plank shute into a cellar. A man in the cellar takes care of them there while the team and man go to the yard after another load. I want hives and combs secure—no bees getting out until all are in the cellar.

Middleburgh, N. Y.

N. D. WEST.

THE ROOT CO. AND THEIR NEW FIXINGS.

I see some one has called your attention to the thickness of the one-piece section. I should like it if sections were made $\frac{1}{8}$ inch thick at least, or if we could get them so to order. I have wondered if the four-piece section is any thicker than the one-piece ones.

In regard to the fence, I should like to have the edges beveled off the posts; but the bevel should be very slight, as the posts are very nearly right as they are. I think the slats should be all of the same thickness, say $\frac{3}{8}$ in. I do not think the space at top of fence should be more than a good bee-space—that is, not quite $\frac{1}{4}$ inch—say $\frac{1}{6}$. I think that the very best fence could be made of three slats; but of course you could not work the material in quite so well. I saw cuts of the Hyde Scholl fences in the *Progressive*. I think they are a toy affair, fit only for men who want to keep bees for pleasure and not for profit. I am well pleased with the new fence, and would not go back to the old separators for any money.

A great deal has been said against your and every other supply-house for putting new fixings upon the market; and some of the great lights in bee-keeping have stood in the marketplace to warn us youngsters not to purchase any new hives, fences, plain sections, etc.; or if we felt that we must buy, to do so sparingly—just as if the supply-dealers were crazy, and were trying to beat us out of our money. I sometimes wonder whose money we are using, and if some of us are not old enough to buy without all this guardianship. I for one am proud of The A. I. Root Co. for looking up new fixings in the bee-business; and I hope even the most conservative of the old beekeepers will let us spend our money and try the new fixings. I am not afraid of new machines running men out of employment, nor am I afraid that I can get up honey in too attractive a shape for the market; and though

the Root Co. make a few mistakes, I know they mean well to us all.

Cuba, Kan., Dec. 12. WM. H. EAGERTY.

SWEET CLOVER; HOW TO GET RID OF IT, AND HOW TO TEACH COWS TO EAT IT.

Friend Root.—Mr. Lewis A. Sawyer seems to be at a loss to know what to do with his sweet clover. I sowed some around fence-corners and little odd places about my farm, not knowing it would grow so high. It grew to about 8 or 9 feet, right where it was in the way, so I cut it down, just as it was coming into bloom, and that was the last of it. It never troubled me any more.

I say yes, the cows can be taught to eat it. I just sprinkle a little salt water on it and they soon learn to eat it without the salt. My cows like it very well. EDW. SMITH.

Carpenter, Ill., Dec. 8.

SWEET CLOVER, AGAIN.

What kind of cattle does Mr. Sawyer have, anyhow? If I had a cow that would not eat sweet clover after I had kept her six months I would certainly dispose of her. I have sweet clover growing in my pasture, but I have as yet to see it bloom. The cattle keep it eaten down all the time. JAS. PRATT.

Cumminsville, Neb., Dec. 31.



A. F. H., Me.—Our bees are taxed like other property. As a rule, bees are taxable in nearly all the States of the Union.

J. C., Va.—If you will keep hybrids or Italians you will have little or no trouble with the moth-worms. Empty combs taken off in summer, and stored in hives, will usually be safe enough from the depredation of the wax-moth—especially so if the ordinary spider can get access to the combs. Combs previously subjected to freezing and shut in a tight box or in a hive, bee and moth tight, will be safe for any length of time.

G. W. M., Ohio.—Tarred roofing paper will in no way be offensive to the bees, especially when used as a lining to the building you speak of; but if you put the bees in an up-ground building it should be frost-proof. All things considered, if bees are to be wintered indoors it is better to put them in a cellar where the temperature can be kept somewhere about 45°. Wintering in up-ground buildings is not as successfully practiced as in buildings partly or wholly under ground.

J. L., Tasmania.—I note what you say in the matter of foul brood. In regard to p. 587 you got a wrong impression, probably because the language is not very explicit. I did not mean to convey the impression that foul brood would be sure to revisit an apiary after hives have been scalded and bees treated. What I did mean to say was that the disease would

surely return unless treatment and disinfectants were administered. I send you our foul-brood pamphlet, and from this it appears that it may not be necessary to boil hives. This is probable; but some authorities think that hives and utensils should be disinfected also. However, if you follow the treatment in the pamphlet you will probably not have very much trouble from the disease reappearing in your yards.

H. C. A., Wis.—Your method of using a large winter case, to accommodate ten or a dozen hives, is used by some; but while first cost of this method of packing may be cheaper it means a good deal of labor. The majority of bee-keepers prefer, if they winter outdoors, regular chaff hives, because they are always ready for winter and are cooler in summer. It is not necessary to use shade-boards or shade-trees with double-wall hives, and some prefer them just for the protection they afford in summer. In regard to feeders, we have for years sold butter-dishes or trays just for this very purpose. One does not need to purchase the more expensive Miller or Boardman feeder, each of which has special features peculiar to itself. Both of them save labor, and with either of them the feeding can be done, usually, at one opening of the hive. As to the Hill device, corncobs or any thing of that sort may be used instead, but they are not as convenient, nor quite so good.

F. A. K., Wis.—I note that you say your bees are dying in your bee-cellar at the rate of three quarts per week. Considering the fact that you have 38 colonies in the cellar this may not necessarily be bad; and yet at the beginning or at least the middle of the winter this is a rather heavier loss than there should be under favorable conditions. One who is used to wintering outdoors, and then winters inside, is often surprised at the number of dead bees there will be found on a cellar bottom in a few weeks' time, and he is likely to imagine that all his bees will die thus before the spring, when the facts are, even under the best conditions, that old bees are pretty sure to come out and die on the cellar bottom, and there may be an accumulation of an inch or so all over the floor, the number depending, of course, upon the number of colonies in the cellar. The loss in this way should be light, comparatively, during the early part of the winter, and increase as the winter advances. I suspect, then, that your loss is greater than it should be. Your loss may be occasioned by the fact that the cellar is not absolutely dark; second, that the hives contain stores of inferior quality; third, an undue amount of dampness; fourth, temperature (38°) is low, if any thing—45° is better. The nearer you can keep it at that point the better will be the results. If a cellar is dark, ordinarily dry, and stores are of good quality, then I should attribute your loss to the low temperature. To bring it higher I would bank the cellar up more or put more colonies in. Fifth, there should be a slight amount of ventilation. This may be secured by means of a stove or by opening and closing doors at night when not too cold outside.

ANSWERS BY DR. MILLER.

A list of questions has been sent me by a correspondent, J. W. C. G., Illinois, which I will here answer in order; and, for the sake of saving space, I will not repeat the questions.

1. My opinion of the statement of W. W. Somerford, that the ten-frame Dovetailed is the best hive in the world, is that it is all right for some cases, but not for all. For some a larger hive is needed. Two stories of eight frames each may be better, but require more engineering. For some a hive with larger frames may be better. For one who pays almost no attention to his bees the year round, the ten-frame is better than the eight-frame. And something larger may be still better. But I don't set a very high estimate on my opinion, and it's liable to change at any time.

2. I think any one who knows how to use T supers properly, and who hasn't some special facility in handling section-holders that I never learned, will decidedly prefer T supers.

3. I use on my supers the regular hive-cover that I use on the hive when no super is on.

4. On my old hives I use Heddon slat honey-board under supers. On my newer hives, with thick and wide top-bars, I use no honey-board unless for some special purpose I want to bar the passage of the queen, in which case I use a wood-zinc queen-excluder. But it isn't needed to keep the queen from entering the supers.

5. I put full sheets of foundation in brood-frames and in sections. In brood-frames that means the foundation touches the wood on all sides, being slid into a saw-kerf in the top-bar, and between the two split halves of the bottom-bar, having little sticks of wood instead of wires. The sticks are $\frac{1}{8}$ inch square, running perpendicularly, first boiled in beeswax, and pressed into the foundation while hot. A $\frac{3}{8}$ -inch bottom starter is used in sections.

6. I use eight-frame hives, most of them of old pattern, having frames varying from the regular Langstroth just enough to be a nuisance. I'm working into eight-frame Dovetails just as fast as I can.

7. I run for comb honey, using a T super $12\frac{1}{2}$ inches wide inside, and long enough for four sections. That makes it take easily 24 sections of popular size.

8. I use separators always. Some do without them; but the character of the honey-flow, or else ignorance on my part, makes separators a necessity with me.

9. My T tins are loose.

10. I winter in cellar. My experiments in wintering on summer stands have been rather expensive; but it is quite possible that, if I knew enough, that might be the better way.

11. All my queens are clipped as soon as it is convenient for me to clip them after they begin laying.

12. If I hived a natural swarm I should put it on the old stand, moving the old, setting the mother colony beside it, and taking the mother colony to a new place in about a week.

13. Yes, I am fairly entitled to the title "M. D.," having worked hard for one that I received from the University of Michigan a

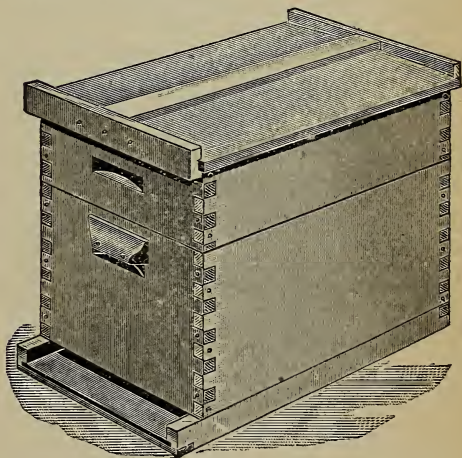
good many years ago. But what between advancement made in the science of medicine as well as in apiculture, and forgetting for want of practice some of the old-fashioned things I did learn, I wouldn't urge your sending for me in case of dangerous illness if you have a reliable family physician within a hundred miles.

DR. C. C. MILLER.

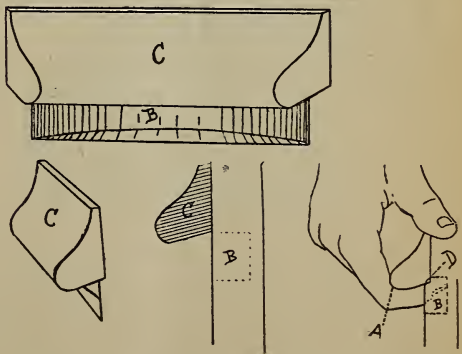


HAND-HOLE CLEATS FOR HIVES.

A short time ago I promised to show you something in the line of cleats in combination with a hand-hole to lift hives. We have finally got them perfected—or at least so they suit



us, and now offer them in all our Dovetailed-hive combinations. They are nothing more nor less than short pieces of molding beveled at each end, and nailed so as to come directly over the top edges of the hand-holes, as shown above. The following illustrations show a little more of the detail.



Perhaps the question may be asked *why* the hand-hole cleat alone would not be sufficient. It is much more convenient than the hand-

hole alone; and the two in combination are far better than either alone. When one tries to lift a fifty-pound hive by hand-holes, his fingers can get a grip only *at the mere tips, on a sharp edge*, as at D. Such a hold is a severe strain on, if not painful to, the ends of the fingers; and one does not feel that he cares to lift very many hives in this way; but if he can get the heft of the weight on the *middle joints* of the fingers, as at A, and on a rounding edge, he can lift all that his back will stand. With an ordinary cleat one has to lift the hive by the first joint of the fingers, and it is only a little better than the hand-hole; but when the hive is recessed back of the cleat a little he has an opportunity to bring the heft of the load where he can handle it to advantage—at the point A.

Hand-hole cleats will *not* be supplied for supers, as these can usually be handled by the holes alone with no great inconvenience.

We sell these cleats separately when called for, at 75 cts. per 100, or \$6.00 per 1000. They can be attached to hives already in use; and where they are to be moved to out-yards, or handled very much, these cleats are a great convenience, and worth many times their cost.

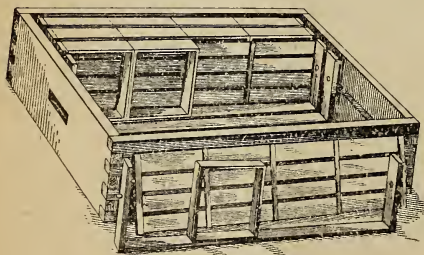
Dr. Miller wants his cleats to go *clear across* the hive. If there are those who prefer to have them so, we can supply their hives with such, but the price (of the cleats) will be twice as much as for the short ones, and will be supplied only from the factory, as our dealers will keep only regular goods.

We have a lot of other little comforts in our 1899 hive, and in our next we will tell something of these also. Our new spring compression for supers excites the admiration of all.

THE DANZENBAKER SUPER.

BY F. DANZENBAKER.

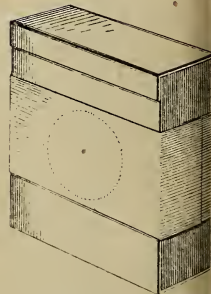
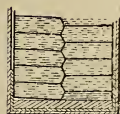
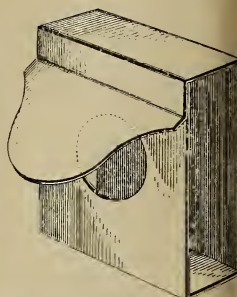
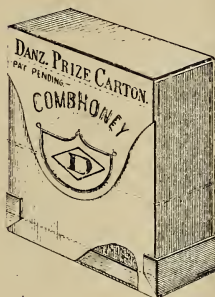
The Danzenbaker super shown here is furnished with hanging section-holders having end and bottom bars the same width as the sections, with free bee-ways their entire length, forming a perfect divisible honey-board that holds the sections firmly together



true and square, and protects their under side from propolis or burr-combs. Each holder is provided with headed iron pins driven through the end-bars from the inner side, securing uniformity in length of bearing on the solid supporting cleats, maintaining a correct bee-space between stories. The fences are supported in like manner, and provide an open beeway at both top and bottom between each

two rows of sections (which is secured by patents issued and pending). One of these fences is used as the follower back of the sections, held securely in place by a curved wire spring set in the side of the super.

The plain sections are seen in position on the holders. The thickness of the sections and fence cleats together affords the same honey-space as is in the 7-to-the-foot sections with plain separators; and when filled with honey they pack closely in the shipping-cases, saving from 10 to 20 per cent in cost and weight of cases and crates in shipping the honey to market.



DANZENBAKER PRIZE CARTON.

Progressive comb-honey producers desirous of promoting sales by doing things just right are putting their best sections into neat attractive cartons, ready to hand to the customer without wrapping, yet secure to carry safely in the pocket, satchel, or market-basket, as other articles are put up for domestic use. These cartons can be made artistic if desired, giving the name of the producer or seller, and kind of honey, while the quality is shown by raising the cover over the opening without removing the sections.

They are made ready to use without folding, ready to open only, and put in the section, which is kept secure in place by a string or rubber band.

They are made to match the sections and fit in the same shipping-cases when filled with honey, and will protect the cappings of all, as there is no space to tilt over in case any should be jarred loose by rough handling in shipping.

They will pay for themselves, insuring prompt sales and better prices.

Washington, D. C.



EIGHT extra pages.

NEARLY every one of our journals has some special features. One, for instance, will be conspicuous for illustrations; another for some special article; another for the discussion of some particular subject, and so on. This number has some of the best articles we have ever published, from men of intelligence and large experience—some of the brightest and best bee-keepers we have.

It is not to be presumed that *every* thing published in GLEANINGS, or in any other journal, in fact, will be interesting to every reader alike. Probably the majority of subscribers glance over the pages, and read that in which they are particularly interested, and skip the rest. The veterans, for instance, probably do not care for instructions to beginners, and the latter have no interest in the discussion where the experts disagree. As it is, GLEANINGS tries to give a general variety—indeed, to cover the whole range of apicultural matter. If there is any subject one or more wish to have brought up, be free to ask for it. If it is of general interest I'll bring it up.

THE GOVERNMENT AND *APIS DORSATA*.

ONE of our subscribers, Mr. Bion Walbridge, of Stony Fork, Pa., wrote to his Representative for reliable information in reference to the government importing *Apis dorsata* from the Philippines, as they are so currently talked of in the papers. Well, it seems that this request found its way finally to Entomologist Howard, who replies:

Mr. Bion Walbridge:—Your request of December 12, through the Hon. Horace B. Packer, for bees from the Philippine Islands, has been referred by the Honorable Secretary of Agriculture to this Division for reply. The newspaper report which you mention was unauthorized. The Department has not, as yet, undertaken the importation of bees from the Philippines. Should they be obtained, however, they would first be carefully tested before any general distribution would be decided upon. If then the latter course should be deemed advisable due notice would be given to those interested, and your application would be favorably considered by the Department.

L. O. HOWARD.
Entomologist.

IMPROVEMENTS IN OUR EXCHANGES.

ABOUT Christmas time, or following New Year's day, we usually see quite a brightening in all the periodicals, and bee-journals are no exception. Prominent among those for 1899 that show new blood and new life are the *American Bee Journal* and the *American Bee-keeper*—both representatives of the American idea, viz., progress and push. The Old Reliable comes out with a new title-page, new body type (just like ours, by way of compliment), and one can not fail to note an added freshness and vigor throughout the whole

journal. It is the oldest of all of the bee-papers on this side of the Atlantic. It is a weekly, and always on time—the only one, I believe, that can really claim this distinction.

Some of what I have said relative to the *American Bee Journal* will apply equally well to the *American Bee-keeper*. It is edited by Mr. Harry E. Hill, a practical bee-keeper whose experience, probably, has been more varied than that of any other apicultural editor in our ranks. He is bound to make his paper jump forward into prominence. I have often admired his clean-cut practical editorials.

ARE SUNSHINE AND AIR FOES TO GERM LIFE?

I AM asked by L. G., in a French journal entitled *Le Rucher Belge*, whether exposure to air and sun will kill spores of foul brood. I do not know from experience, and am hardly scientist enough to follow out an investigation. But there are reputable scientists who say that such exposure does kill the germs; but if it requires two hours and a half *boiling* to do it, how many years of air and sunshine will it take to do the same work? I must confess that I myself would not care to place too much reliance on the simple agencies of these two elements. Of course, I am aware of the fact that the rays of old Sol and the stuff we breathe are foes to most forms of germ life; that is the reason why it is so necessary to let sunshine and fresh air into sleeping-rooms, and why rooms kept dark to prevent nice carpets from fading, or shut up tight to keep out the dust and noise from the street, are not apt to be healthy places for persons to live in or to sleep in for any great length of time.

DOOLITTLE ON BURR-COMBS; CHANGING FRONT.

IN our new department, "Pickings from Our Neighbors' Fields," it will be noticed that G. M. Doolittle is a champion of wide and thick top-bars, for the reason that they do away almost entirely with the burr-comb nuisance, for he says, "In many of my hives not a burr-comb appears from one season's end to another." I was a little surprised when I read this, for, if I remember rightly, Mr. Doolittle was once in favor of these same burr-combs, and that he wanted them for "ladders"—that is, for a handy way of entering the supers. The reason I remember it is that, when I began to champion these wide and thick top-bars, he championed the burr-combs. Well, I am not going to say, "I told you so," but, as I said before, it shows one's candor—nay, even more, his progress—when he is willing to go back on old tenets and adopt ideas advanced by opponents.

"HONEY POPCORN CRISPS, FIVE CENTS."

WHEN I called on Mr. W. A. Selser, the Philadelphia honey-man, he showed me some of the sights in and about the city, reference to which has already been made in these columns. On one of these excursions out of the city into the suburbs we stopped at one of the leading pleasure-resorts, the name of which

has gone from me; but no matter. At this resort we visited a *honey-popcorn* stand where the proprietors make a specialty of honey popcorn for five cents a package.

We bought some of the crisps, and, sure enough, they had an unmistakable honey flavor; and as a delightful, toothsome confectionery they can't be excelled. That pure honey as a sweetener is used is evidenced by the fact that Mr. Selser furnishes the honey, and lots of it.

Elsewhere I show a snapshot that I took of the pavilion. Mr. Selser stands at the left, with his hand on the counter, on which are piled the crisps. That the place does a large business is shown by its general appearance of permanence, and the fact that there are two or three clerks there all the time. It has a modern cash-register; indeed, one of the clerks is just making out the change to hand back to Mr. Selser.

The crisps are, of course, made right in the building, and the enormous popper is shown at the right.

I suggested to Mr. Selser that it would pay him to sell these honey crisps; but he thought the demand would hardly be enough to warrant him in advertising them.

I do not know but it would almost pay us to catalog some of the foods prepared with honey; for instance, a good honey caramel, honey cakes, honey jumbles, honey popcorn crisps—all these and more might have a considerable demand. If the sale of them accomplished nothing more it would encourage the consumption of honey of darker grades by the baker and confectioner.

HONEY-LEAFLET NOT A SUCCESS AS A HONEY-SELLER.

A SHORT time ago I asked through these columns whether the honey-leaflets when freely distributed helped the sale of honey in the local markets. I have received quite a number of responses, and nearly all confess their surprise at the fact that the leaflets seem to have no effect one way or the other. One writer says people are so used to having circulars in the line of patent-medicine advertisements shoved under their noses and on their porches that they pay no attention to them; and, besides, some people do not like to have their premises littered up with such stuff.

There is just one correspondent out of the whole number who said he found these leaflets to be of material aid in disposing of his honey crop. But he usually hands one of the leaflets direct to a consumer, calling his attention to the interesting matter that he will find about honey and the honey recipes in the back part of it.

It occurs to me that the whole trouble is we have gotten the leaflets up in too cheap a form. Something a little more expensive, perhaps, printed on a fine grade of paper, bound in a tinted cover, and perhaps decorated in colors, with, say, some striking and interesting pictures showing the art of beekeeping, and how honey is produced, might

attract the attention of the consumer and cause him to read it through. But, of course, such a leaflet, or booklet, as it would have to be in that case, would be considerably more expensive; and the average bee-keeper could not afford to give away large numbers of them.

Now, then, dear reader, what are *your* views? Should the leaflet be more expensive, and distributed to only a few consumers? or perhaps, better still, left only with retailers and wholesalers? or is the leaflet, such as we have been sending out, all right? May be it would be impossible to print all the suggestions that come in, but I should be glad to get expressions, and will then formulate them into a general statement, as I have done this time.

OUR NEW DEPARTMENT.

OUR readers will notice a new department, entitled "*Pickings from Our Neighbors' Fields*," immediately following *Stray Straws*. This department is to be edited by my old friend and co-worker, "*Stenog*" as he will sign himself, but who is none other than W. P. Root, who is at this very moment taking down in pot-hooks some of my offhand sentences. Mr. Root's writings have before appeared in these columns in a series of articles reviewing some of the old literature on bees, running through most of the year 1893. Since that he has had but little to say himself in our columns, although you may be sure he has carefully scrutinized every word and every punctuation-mark that has appeared in this journal, and in some of the others. Mr. Root has a keen sense of the true and beautiful, the good and the useful, and particularly of the dry and the humorous. And in his "*Pickings*" he is to have free swing except that he is not to fling flings or sling mud. He is to thrash over the gleanings from our exchanges, and then re-dish them up properly seasoned and spiced. Well, I'll let him now speak for himself:

At the outset, I deem it but fair to myself to state that it is not with the feelings of a novice that I am attempting this semi-monthly spread of a new table. For a good many years I have had exclusive control of one department in *GLEANINGS*, although it was not signed. No matter how crowded, the editor has never asked me to cut it down. From start to finish it has been all my own, even to setting the type. The grammar has never been called in question, either by Mr. Taylor or Mr. Thompson. I refer to the index—that indispensable adjunct to all good journals. But in taking charge of this one, the personal factor is necessarily larger. The design of it is well described just above: namely, to state in a very concise manner the conclusions of writers in other bee-journals, on some subjects.

A private letter leads me to state that if any of the readers of *GLEANINGS* wish to ask any questions relative to the mechanical part of writing for a journal I shall be glad to answer such; and even without such questions, probably a good many suggestions will be made at this end of the line relative to the proper preparation of copy for printers' use.

I rather like to give advice well sugar-coated, as it is more apt to be taken in that form. The "*traditions of the elders*" rest very lightly on me, and hence I presume I shall have to state things in my own way instead of conforming to any cast-iron rules. But the value of this department will be tested by time, and not by any promises I can now make. It involves a good deal of reading in English, certainly, and will probably include a few heads of grain gathered in German, French, and Spanish fields, although Dr. Miller is now attending quite faithfully to that kind of work.

STENOG.



This poor man cried, and the Lord heard him, and saved him out of all his troubles.—PSALM 34:6.

Dear fellow-travelers, I want to talk a little about the grip this morning; and if you have had it I think you will be interested in what I have to say. I told you in our last issue about getting a crick in my back, and catching cold. Well, by being careful, and staying indoors, I got over it in the course of two weeks, or thought I had; but after I began to get around a little, something—at least it *seemed* as if something—took hold of me by the back of my neck and held on with quite a "grip." I tried to stay indoors, but peculiar circumstances rendered it necessary that I should go out just a little; and then I began to have toothache, earache, and sore throat all at once. You know, without my telling you, whenever I am in trouble I begin to ask God for guidance; or, if you choose, I begin to inquire what God would have me do under certain circumstances. A recent writer of great power has expressed it, "What would Jesus do?" A traveling man who came quite a distance to see me on business remarked that he also had the grip. He said he had it a great deal of the time, but still he kept traveling, and attending to business. Said I:

"Why, how do you manage to travel and attend to business when you have the grip?"

"Oh! I keep driving it off with quinine."

"But quinine does not seem to answer with me. Other people find relief by taking quinine, and I often try it because others use it so freely; but it does not seem to work well with me."

"Oh! that is true. It won't work with some people. But I will tell you what to do. You take some whisky with it. 'Quinine and whisky.' That is what I take right along. It is the only thing that keeps me up."

I had taken a good look at my companion before, and had been fearing he was an intemperate man. There was not time, and I did not think it worth while, to tell him that I considered the remedy worse than the disease; but it kept going through my mind the rest of the day—*quinine and whisky*. I wonder how many doctors there are in this land of ours who tell their patients to take quinine and whisky. Grip is doing a great deal of harm, no doubt. An old doctor book, printed before grip was known, tells me that influenza is a peculiar disease that afflicts whole cities; and of recent years it has been *still more* of a city and town epidemic. It breaks up schools and cripples factories; it keeps physicians running until they are worn out; it causes an untold amount of pain and suffering, and sends many invalids and old people to their graves; but, oh dear! grip is not a circumstance—not a drop in the bucket, compared with the ravages of whisky. Why! I think I am safe in saying that all the epidemics and plagues that ever troubled mankind are as nothing com-

pared with intemperance. A man may die of smallpox, cholera, or yellow fever, and be an honest man and a Christian; but when he dies of whisky it is not only a lost body but a *lost soul*.

When I was inquiring what God would have me do for the earache and toothache together the answer came very decidedly that whisky above all things was what the great Father would not have his people use. While I was kept at home with my face over the hot radiator, trying to get relief from pain, I prayed over this matter a good deal; and right during my sufferings one of the clerks brought over to the house a bundle of papers and the letter I submit to you below:

Dear Mr. Root:—I take the liberty of addressing you because I feel led of the Spirit to do so. I have been a reader of GLEANINGS for a number of years through the kindness of a friend who lent them to me, and for about two years just past I have been a regular subscriber; and dear old GLEANINGS is a very much loved and honored member of our family. I have loved very much to follow you through your many experiences in the Christian warfare as I find it recorded from time to time in Notes of Travel and Our Homes. If I can find words to express my feelings toward you I think I shall come the nearest to it by saying you have seemed very much like a very dear elder brother who has advised, comforted, and helped me many times when in sore perplexity; but for a long time I have wished you knew God's way of healing; what his will is concerning these things. I will not attempt to explain, but will leave that to the leading of the spirit and God's teaching through his servant, Dr. Dowie. If you have any doubts or prejudices in regard to these things for Jesus' sake and the sake of sin-stricken suffering humanity, ask God to help you to lay them all aside, and seek diligently for the *whole* truth until it is opened up to you in all its grandeur, beauty, and power.

I mail to you three copies of a paper printed in Chicago, in which you will find the true bread of life broken to the world. These are old numbers of the papers, but I send them to you because they have done a mighty work since they were published, and I feel that the Spirit of God especially accompanies them. I have thought many times what a power for God our beloved Bro. Root would be if he only knew God's way of healing; and I send these papers to you with a hope and prayer that, by his Spirit, he will lead you fully into the blessed truth that God sent the Great Physician that we might receive through him healing for our wounded bodies as well as soul and spirit; that he came indeed and in truth that we might have life, and that we might have it more abundantly.

Your brother in Christ,

Edinburg, O., Jan. 12.

G. G. NORTHRUP.

The papers that came with the letter were Leaves of Healing, from Dr. Dowie's establishment in Chicago. I have read these Leaves of Healing for a long time. I have also looked over Dr. Dowie's establishment while passing along the streets while in Chicago. There is certainly very much that is good in the Leaves of Healing; yes, there are some of the grandest truths, expressed with wonderful force, and I am glad that such a man as Dr. Dowie has been raised up to deal terrible blows at existing evils; but I do think that he makes some grievous mistakes; and, for that matter, is it not true that all of our great teachers, especially those who seem to have great gifts along certain lines, make more or less mistakes?

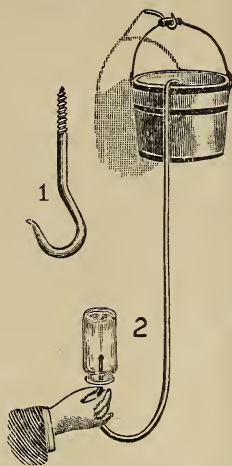
Let me thank the dear brother who sends the above kind letter, before I go any further. And then let me protest against one expression that Dr. Dowie uses quite often in his denunciations. It is this: "Doctors, drugs, and devils." No doubt there are doctors who *are*

veritable devils. I do not know but I can go with Dr. Dowie and use that term for those who deliberately recommend their patients to use quinine and whisky for the grip. Perhaps they do not realize it nor mean to do it; but they are certainly doing the Devil's work when they tell a man to use such a remedy as that whenever the grip troubles him. Some druggists may be in the Devil's service—those, for instance, that stand behind the sign of a drug-store and then make their money by selling whisky indiscriminately; but God forbid that we should in this sweeping way call *all* druggists and *all* doctors "devils." Dr. Dowie makes some other serious mistakes in his vehement denunciation. In one of his articles one might almost think he classes the average minister of the gospel with the trio mentioned above; but I sincerely hope he does not mean that.

After reading the above exceedingly kind and Christianlike letter, and reading the Leaves of Healing sent me at an opportune moment, I began praying earnestly for wisdom in regard to this matter of remedies, not alone that my own pain and distress might be stopped, but that I might guide and direct others. I had been using powerful liniments to stop my toothache, and had got along pretty well; but the malady increased more and more. The liniment was needed on my face and in my mouth. I used these powerful drugs until pieces of skin the size of a finger-nail came off from the inside of my mouth near the gums. I also used the liniment in and around my ear, and I began wondering whether it was the intention of the great Father above that we should depend on things of this kind for relief. While thinking over the matter I went into a warm closet near by and knelt down and prayed very earnestly, not only for relief, but for wisdom that I might direct others.* I remember wondering, as I rose to my feet, if it were possible some strange thing might happen so this pain would be suddenly taken away; and my face began to brighten, even amid the pain, as a glimmer of faith began to creep into my heart. Then I remembered the picture I give you above; and it occurred to me that some of the readers of GLEANINGS said, when I gave the same illustration years ago, that this hot-water apparatus was just the thing for cleansing the nostrils and ears when one had ague in the face or cold and catarrh in the head.

* Some of the friends who read GLEANINGS express wonder and surprise that I should speak thus boldly right out in print about kneeling in my closet, and praying for wisdom or about other things that trouble me. I know this is unusual; and were it not for my great desire to help others along the same line, I would not do it; in fact, I often hesitate. But, dear friend, if I should tell you of going into a doctor's office, and having a long earnest talk with him, nobody would think it strange; and why should we be backward or embarrassed in telling about consulting the Great Physician, who holds even the winds and the waves in the hollow of his hand? Again, there are great sanitariums that have been built up on this very matter of faith cure, or relief that has come through prayer. There are so many different organizations of this kind just now that such proceedings need not occasion surprise or remark. The point I would make is that God both hears and heals in the humblest home as well as in an establishment like Zion's Tabernacle in Chicago.

APPARATUS FOR CLEANSING THE NOSTRILS, THROAT, AND EARS WITH HOT WATER.



The materials were right at hand, and in a few minutes I was passing a stream of hot water—just as hot as it could be borne—into my nostrils, first one side and then the other. The effect of the warmth in getting the water clear through the nostrils into the throat began to make me sneeze; and with the sneezing came a discharge that had accumulated in the nostrils and near the passages to the ear; and, sure enough, the pain was gone (almost as if by miracle), and it was

done, too, without drugs or liniment of any sort—just hot water and nothing else.* Of course, this was only temporary relief; but it was ever so much better than the strong liniment. I got along in this way quite comfortably until the malady became so much worse that the water treatment gave relief for only a very short period. I managed to get through the night, and got a little sleep, but in the morning things seemed to be rather worse. Once more I went into the closet, and prayed. This time there seemed to be no answer to the prayer. While considering the matter I remembered that the prophet Elijah, when he told the servant to go up and look toward the sea, was told by the servant that there was nothing. Then the prophet said, "Go again." And it was not till he had gone *seven* times that he saw a little cloud appear. I then went into my closet, and prayed again. When I arose I had the same experience as before. There was a glimmer of faith that something was coming; and then it occurred to me that the little stream of water through the nostrils was insufficient, and if I could place the whole side of my head in very warm water the outside application of heat and moisture would aid the other. I thought of the vapor baths that are so much advertised nowadays, but none was handy. In a minute I procured a wash-basin, and some water as hot as my face would stand it without blistering, and placed it on the edge of the cook-stove, where the heat would be kept up to the proper point, and in a few minutes I was again free from pain. No more liniment or toothache cures were used; but it was three or four days before the trouble began to let up. The suffering was greatest in the night, notwithstanding rubber

* At the present time, nearly two weeks since the above occurred, I have occasional touches of the earache; but this is banished almost instantly by simply cleansing the nostrils with hot water as indicated above; and one application gives me relief for several hours, and sometimes for a whole day. This comes right in line, as you notice, with my old hobby of doctoring without medicine. Pure air, pure water, and wholesome food—has anybody yet discovered how much these may do to get us well and keep us well?

bags filled with hot water, and hot soapstones, etc. My sleep was feverish, and disturbed by troublesome dreams. Of course, I called in our family physician for advice. He gave me some medicinal remedies, but said he thought the trouble all came from a certain tooth. Then our dentist was called; but he said it was *grip* and *not* the tooth. My gums were *all* swollen on that side, and the teeth were all gold-capped, and it was going to be an exceedingly difficult and distressing matter to pull the one the doctor pointed out, because it was one of a bridge of three. My face was so sore just then that just the *thought* of getting off the bridge and extracting one of the teeth almost crazed me. When doctors disagree, who shall decide? I prayed over the matter, and stuck to my hot-water treatment.

During the night, when things were at the worst, I remember feeling a good deal discouraged. I had prayed again and again, and was sorely tempted to think that praying did not do any good, nor have any effect in the matter one way or the other. I knew such thoughts were wicked, and I begged piteously to be lifted above them. I prayed for faith. Let me digress a little right here.

In considering this matter of grip I had been looking over the papers to see what the doctors said about it, and I remember seeing a statement that a lady in Cincinnati had committed suicide, evidently for no other reason than that she was crazed with the pain of grip. In my feverish state of mind that night, some evil spirit suggested that it was, after all, quite a reasonable thing to do. I have sometimes asked myself the question, "How does anybody *know* that the suicide escapes pain or trouble?" This evil spirit that hovered near suggested, "Why, there is no *question* in regard to the matter at all. When one is *dead* he does not have the toothache, earache, nor anything else. Death is certainly freedom from *every* ache and pain. It is rest and quietness. And quietness, even if coupled with no consciousness at all, would be deliverance, say to yourself, just at this time." But even if I was dreaming I had sense enough to know I was getting near to greater danger than any bodily aches or pains could give. There are other ways to get acquainted with Satan besides drinking whisky. I groaned in anguish; I prayed more earnestly than I had before for deliverance from *all* the powers of darkness. And then came something that astonished me. The feeling had been slowly creeping on me that, although my prayers had been answered heretofore, just now there was no answer. The dear Savior was gone. The consciousness of his presence, that had been with me through all my Christian life, seemed to have left me, and faith seemed dying out. At this moment I either heard a voice speaking, or words seemed unfolding themselves to my imagination, at first dimly, and then bright and clear. The words were these: "My God, my God, why hast *thou* forsaken me?" At first, with the pain and misery I could not recall the circumstances, nor tell in what part of the Bible the words were found; but they startled me because they seemed to picture

with remarkable vividness the very thought that was in my mind. And then it burst upon me that they were the *dear Savior's words* just before he gave up his life—words that seem to have been wrung from his very soul by the terrible agonies he suffered. If the Father saw fit to withhold from *him*, his only Son, for a brief period, his wondrous love, could I reasonably complain if he, in his infinite goodness and love, thought fit to give *me* a little glimpse of existence without a sense of his love and of his loving presence? The answer that I had received in this strange way gave me faith and grace and patience to bear my troubles all through the rest of that experience; and shall we not all remember that Jesus, the Son of God, our Savior and Redeemer, did not have all his prayers answered? That is, God did not at once give him relief or did not *always* grant all his petitions. Let us remember here that Jesus never asked anything for himself. He never performed a miracle to feed himself when he was hungry. Our prayers are almost all for self.

Now, before closing let me turn briefly to Dr. Dowie and his wonderful institution. If I am correct, in his answers to questions he says all pain is of the Devil, and that there is no need of suffering from pain. Now, I have never heard any one say that Dr. Dowie ever fails in curing any disease or any patient. Even he himself does not tell of his failures. We grant he has had wonderful success; that many diseases have been cured by prayer, that doctors called incurable; but in fairness should not the public be informed of the failures as well as of the successes? We often send dear friends to celebrated sanitariums; and a great many times we are told the sanitarium can do nothing because the patient was brought in too late. Jesus never found a patient that was too near death. In fact, it made little or no difference to him whether the patient was dead or alive when he was called. Now, these faith-cure people certainly do not claim any thing of *this* sort. Sometimes God grants their prayers, and the patient is healed; and may his holy name be praised for this! But those who claim to be so near to the great Father that he heals diseases for the asking, certainly must, in the nature of things, live very honest, pure, transparent, and clean lives. They must shun every *appearance* of evil or deceit. I have sometimes thought that perhaps God might, even in these latter days, see fit to commission some child of humanity with power to perform miracles; but that child would have to be more honest and pure than any human being I have ever yet seen or heard of. Please do not think me too hard on humanity, dear friends. God, in his loving kindness, carried me through severe suffering. In his loving kindness, as I understand it, he saw fit to give me a knowledge by *actual experience* of the suffering that many of us are called on to endure, in answer to my prayer to know what his holy will is in regard to using drugs and even harmless liniments. So far as I can gather, he seemed to sanction rather the use of pure water, and showed me how to use it.

I do believe God is pleased to have us call

in our family physician, our family dentist, or the pastor of our church; but I do not believe it is his will that we should get through life propped up with drugs, stimulants, etc.; and in all these things where we are in ignorance I do believe, as the dear brother has said who wrote that letter, that his Holy Spirit will lead us if we put ourselves under his guidance.

May be I am not giving our family physician sufficient credit in this matter. He attended to the case very faithfully; asked questions; made suggestions; several times he inquired by telephone how I prospered. He emphatically objected to both quinine and whisky when I asked his opinion.* He said no stimulants of any kind were needed in such a case.† Of course, he gave it as his opinion that the tooth would have to be out before I could get relief; but when the dentist said he did not believe the tooth was the cause, the doctor pleasantly and willingly said he would do the best he possibly could without disturbing the tooth. Some of the faith-cure people will say I limited my faith in prayer by holding on to the doctors and hot water. You know they often claim that an invalid must show his faith by throwing away his crutches. In answer to this, permit me to say I put my entire case in the hands of the Great Physician unreservedly. I asked him to help me out of my trouble or else give me grace to bear it. I swept aside all my own notions or opinions, and looked to him, and to him only, for guidance; and I kept constantly in mind that relief for myself was a secondary matter; the first and foremost thing I begged and plead for was wisdom to guide, direct, and advise those who ask me almost every day what I would suggest in the way of treatment for certain maladies. Let me add one thing more: Both Dr. Dowie and Dr. Kellogg are certainly making a grave mistake when they say that the use of meat as food tends to develop the lower and baser passions. The effect of a lean-meat diet is just the contrary. Hundreds can

* Let me give you a little instance right here, emphasizing the wisdom of consulting your family physician. Huber has had a siege of malarial fever. Before he had sufficiently recovered he went out into the woods and climbed trees to put up a telegraph wire over to a neighbor's. Then he had a relapse. Some two weeks after he had recovered from the relapse, down he went again suddenly, and the fever thermometer showed 104 degrees. Mrs. Root and I were greatly worried, because we thought he was down with malarial fever the third time, and it seemed to us more severe and sudden than any of the previous attacks. When the doctor saw him he relieved our apprehensions very quickly by saying, "Yes, he has a fever, and a high one, but it is of another kind. There is no malaria about him at all. This is *grip* fever, and you need not worry about it." Sure enough, Huber was up and around the next day, and the day after that he was attending school. It is certainly wisdom to let a physician decide in the outset whether the trouble is something that may prove to be serious or nothing you need worry about.

† Among a certain class, "quinine and whisky" has become a stereotyped remedy for the grip; and there is not a question in my mind but that it is an excuse for taking drinks, and, may be, getting on a spree. The physician who tells his patients indiscriminately to take quinine and whisky, should be, by concerted public opinion, left without patients or practice, and given to understand that he is a useless relic (or worse than useless) of the past. Surely no Christian physician can lend himself to any such scheme of the evil one.

attest this. It is *sugar* and *starch*, especially the former, that feed and inflame the lower passions. There need be no argument in regard to this. Every one who has tested the lean-meat diet will have noticed this distinctly; and after it has been followed for a month, or a series of months, the tendency of the diet becomes unmistakable. There are thousands of doctors who have yet to learn this fact; but they *might* learn it very easily if they would take a little pains. While I have gone over most thoroughly all the arguments of the vegetarians, I am obliged to believe that not only the teachings of the Bible, but experience, in modern days, indicates that it is God's will that at least many of us should use animal as well as vegetable food.



SPRAYING FRUIT-TREES — WORMY APPLES.

Prof. Slingerland, of Cornell University, has just given us, in Bulletin 142, the most complete history of the codling moth that it has ever been my fortune to come across. Prof. S. has followed the insect for years, has studied its various phases in various parts of the United States, and has traced it with such fidelity from the egg to the adult moth when she commences laying eggs again, that there can not be very much mistake in regard to the matter. He has also made himself thoroughly familiar with every thing that has been written on the subject. His work is illustrated by the most beautiful cuts, not only of the moth, larvæ, and eggs, but of the embryo apples at the time the eggs are laid. He tells us just why we spray, when to spray so as to do the most good, and also cautions about spraying when it does little or no good. The part that interests bee-keepers most is the following, which we take from page 58. The italics are original:

Never spray a fruit-tree when it is in blossom.—You can reach the insect and fungous enemies just as effectively, and in some cases more so, either just before or just after the trees bloom.

The story is so well told that I read it with rare enjoyment from beginning to end, and read several portions of the bulletin over again. It rejoices my heart to know that the world contains such faithful, indefatigable students as Prof. Slingerland; and when such a man bends his whole energies, and ransacks the world for facts, he ought to be remembered gratefully; for getting rid of wormy apples the whole world over is no small thing, I tell you.

COAL OR GAS TAR FOR FRUIT-TREE BORERS.

On page 742 of our issue for Oct. 1, 1898, one of our subscribers gives a very emphatic recommend for gas tar. I felt a little uneasy about it at the time, for fear it might kill the trees; but I have just found a report from one of our experiment stations, backing up friend

Barr; so I think we may consider it settled that coal tar is all right. Below is the clipping:

Coal tar was very effectual, only a few borers succeeding in getting started in trees brushed with it, and it did no injury to the trees. The following proved sure death to the trees: Paris green mixed with glue, raupenleim (German caterpillar lime), and dendrolene.

DIGGING POTATOES BY MACHINERY DURING A WET TIME.

They say misery loves company. I felt a little ashamed to think we could not dig our potatoes with a modern high-priced digger, during the past fall. We clip the following from a recent number of the *Ohio Farmer*:

But you can not dig clayey land when it is too wet to crumble and rattle through the elevator. We could use ours scarcely at all this year—about two hours of a single day—the rest of the time for five weeks it was too wet, and we dug with forks. But neither plow nor cheap digger would work.

Prof. Chamberlain uses a Hoover digger, if I am not mistaken. Well, I do not wonder it would not work. But ours were all dug with one of the cheap shovel-plow diggers notwithstanding. I find, however, we have more cut potatoes than usual.

WARNING AGAINST FRAUDULENT TREE-PEDDLERS.

The above is the heading of a newspaper bulletin from the Ohio Experiment Station. They say that our adjoining county of Wayne is infested with fruit tree swindlers who are charging five times the ordinary value for peach-trees. The swindlers claim these trees are proof against the yellows. The people at our experiment station caution the people of Ohio to beware of any man representing he has something new and wonderful that our regular nurserymen and expert fruit-growers know nothing about. The bulletin well says, "There are no horticultural secrets." It says further:

Those who wish to get trees of any meritorious variety can procure them of any reliable nurseryman, at a fraction of the price asked by peddlers. No one need pay more than ten cents each for the best varieties of peach trees. Some new and untried sorts are held at higher prices, but no well informed peach-grower would plant any except old sorts that are known to be good, and these are very cheap.

WHAT SHALL WE EAT?

We copy the following from a government bulletin printed in Washington, D. C., in regard to food and health.

The cost of a diet may be lessened by consuming less fruit, cheaper cuts of meat, and fewer kinds of vegetables. Fruits add comparatively little to the food value of a diet, and the cheaper cuts of meat are as nutritious as the more expensive cuts. While vegetable foods are apparently essential to a well-regulated diet, no marked advantage is due to a great variety of vegetables. Wheat flour in the form of bread, etc., is one of the most nutritious and cheapest foods.

Please find inclosed subscription to GLEANINGS for another year. I think it a most valuable journal for the bee-keeper. Without it I might "keep" bees, but I certainly could not work them to advantage.

J. M. MITCHELL.

Glenhope Farm, Queensland, Nov. 11.

Our Roll of Honor.

I have been reading GLEANINGS since 1877.

Hogestown, Pa., Jan. 3.

P. P. FORNEY.

I have been a continuous subscriber from the time GLEANINGS was printed by windmill power.

Fishkill, N. Y., Dec. 23.

E. H. SHERWOOD.

I have read GLEANINGS since it was "Novice's windmill print," but can not say now whether I commenced with the first or second volume.

Canajoharie, N. Y., Jan. 5.

JULIUS HOFFMAN.

I have taken GLEANINGS ever since the second volume was issued, and I don't think I have missed a number.

Burr Oak, Mich., Dec. 31.

H. C. GILSON.

I commenced taking GLEANINGS when it had only two leaves, and have now 20 years' volumes. Others come and go, but GLEANINGS stays. It is instructive and elevating, and to me it has been a great financial success.

Norwich, N. Y., Dec. 21.

M. ISBELL.

I believe I have taken GLEANINGS from the first number, with the exception that I subscribed the first year for the quarterly, and did not subscribe for the monthly until the next year. I must have had, during this time, a number of hundred dollars' deal with you, which has been satisfactory in almost every respect.

Birchton, N. Y., Dec. 19.

J. I. PARENT.

I think I have taken GLEANINGS that long, but can not say for certain; but I was taking it before the centennial, in 1876. I recollect the piece you wrote about asking the old deaf lady to make you some starch so you could show how to make foundation at the centennial. I have no data to tell, but was a subscriber when you printed it by wind power. I have never missed a copy since.

Shellsburg, Ia., Dec. 20.

ROBT. QUINN.

I claim to be one of those who have taken GLEANINGS from the first. I did not commence with the first number, but I sent and got all the back numbers, and have that first small number yet when it was started quarterly. GLEANINGS has always been a great help to me, not only in bee culture, but in almost every thing else; and wife and children have been benefited by it too.

Low Banks, Ont., Can., Jan. 2.

ILA MICHENER.

Friend A. I. Root—I commenced in the bee-business in the spring of 1870, and have taken GLEANINGS continuously since its first number. I believe I have every number up to date, as I bind them in book form by volumes. Its constant improvement is a credit, not only to the present editor, but to the father who trained him to do the work so well. Happy New Year.

Independence, Cal., Dec. 27.

WM. MUTH-RASMUSSEN.

I have taken GLEANINGS nearly all the time since it was published, and have the back numbers laid by now. I have been a continual subscriber to the *American Bee Journal*, and have nearly every number since it was started, 1861. The way I became acquainted with Mr. Root was by his writings in the *American Bee Journal*. I built the first extractor, and shipped the first extracted honey from this county. I have been in the business since 1860. I wish you a happy New Year.

West Groton, N. Y., Jan. 1.

D. H. COGGSHALL.

My Dear Mr. Root—I do not want a prize, but I want to let you know that I have taken GLEANINGS from the very first number, and that all the volumes except the last two are bound. I followed Novice's writings in the *American Bee Journal* before GLEANINGS was started and have with pleasure watched the gradual progress made, and the high moral tone adopted by GLEANINGS, and hope it may long live to carry on the same work, for the benefit of bee-keepers.

Wishing you a happy new year and long life and happiness.

L. omis, Cal., Jan. 9.

Yours truly,
THOS WM. COWAN.

As well as I remember, about 22 or 23 years ago I went down into Mason Co. to attend a Sunday-school convention, and stopped with a Mr. Beard. There I saw a honey-extractor for the first time, and for the first time I saw GLEANINGS. Mr. Beard very kindly gave me a copy of GLEANINGS when he saw how much

I was interested in it. It was the first work I ever saw on bee culture. I came home and read it from cover to cover. Then I said to Mrs. F., "I must send right away for GLEANINGS before they tell all they know about bees," for I thought it would not take more than two or three months to do that, and then I should have no further use for GLEANINGS. How far I missed the mark I can't tell, for here you are still going on, bringing new things out of the old, as well as introducing many new ones. C. M. FARRAR.
Confidence, W. Va., Dec. 29.

Special Notices by A. I. Root.

ROCKY FORD CANTELOUPE MELON.

I notice our seedsmen want over \$1.00 a pound for Rocky Ford grown seed. Now, while we were eating them there by the carload at Omaha, why didn't somebody think to save some seeds? and can't some of our Rocky Ford friends do a little better than the above on prices?

OUR FIRST STEAM-ENGINE.

On page 24 of our Jan. 1st issue I spoke of getting a $4\frac{1}{2}$ -horse-power engine to back up the windmill when the wind did not blow; but at that time I did not know that the maker of that first engine had at the time a standing advertisement (see page 111). It seems that he has been in the same line of business for over 25 years; and the low-priced engines manufactured by James Leffel, Springfield, O., are still doing a vast amount of work of different kinds throughout our land. After using ours for several years we sold it at a very fair price, and since then it has changed hands ever so many times; and it has been hauled around here and there, and the last I heard of it it still was doing good service although exposed to the weather and all sorts of rough handling.

TWO NEW ONIONS.

When I made up my list of novelties for our last issue I omitted two new onions—the Gigantic Gibraltar and the Australian Brown onion. The former is much like the Prizetaker, only larger, and so far every plant seems to produce a big nice solid onion. For starting in the greenhouse and transplanting in the open air, they are the best onion known, so far as I have heard. But, unfortunately, they are not a very good keeper. They should be sold very long after harvesting them. The other one, the Australian Brown, is about the best keeper of any onion known. In fact, they have been kept over a whole season so that, when the old and new onions were placed side by side, one can hardly tell one from the other. Prices of the latter will be: Packet, 5 cts.; ounce, 20 cts.; pound, \$1.75. Price of the Gibraltar: Packet, 5 cts.; ounce, 25 cts. It is said that neither kind ever produces any stiff necks or scullions. And by the way, this is often the case with any onion for the first few years after its introduction. After the seed gets generally in the market, and the price goes down, then seedsmen become careless about growing the seed. For this reason alone it sometimes pays to test new varieties of onions.

TEN DOLLARS FOR A SINGLE POTATO.

You may remember that a year ago last October, Wm. Henry Maule permitted me to take one potato to from T. B. Terry's, with the understanding that all I succeeded in growing from one potato in one year should be Maule's property. I to have \$1.00 a bushel for growing them. Well, I grew three bushels; and after receiving my \$3.00 I asked Maule what he would take for the potatoes. He said they were worth to him \$10.00 per barrel; and as his stock was limited he did not care to sell for any less than that. I was somewhat disappointed because I did not succeed in getting more than three bushels from the one potato; but when I received Maule's 1899 catalog I saw where the trouble lay. This new potato is named the Commercial. Among its other qualities let me quote the following in regard to keeping:

I have a record of keeping the tubers in perfectly good condition, in ordinary storage, until August of the year following their production. The potatoes were just as edible and nearly Aug. 15 as the day they were dug.

You see, I took that potato home and tried to make it sprout in the greenhouse. I fussed with it a great part of the winter, but I could not make the eyes sprout, to save me, till toward spring; then when I succeeded in getting some new potatoes in the green-

house I had the same trouble in getting these same new potatoes to sprout in the open ground, so that the frost caught them before they had really done growing. Now, the very peculiarity that made this potato a bad one to grow one crop in the greenhouse, during winter, and another in the open air, during the summer, is one of its most valuable characteristics. If planted in the ordinary way it is medium early, and I believe it is the largest yielder of any potato I have ever got hold of. It is a seedling of the Wilson Rose, and is of the Rose type, and it certainly has great constitutional vigor. If any of our readers care to try it we will furnish it, by the pound only, at Maule's prices. Single pound, postpaid by mail, 50 cts. You may remember that T. B. Terry grew in the open air nearly two bushels of tremendously large nice potatoes from a single potato that Maule furnished him.

WHAT ARE YOU GOING TO GROW THIS SEASON?

A good many people are afraid to grow perishable crops for fear they may not be able to sell them all, or because they do not want to be obliged to stop their work to take care of the crop just when it is at its best. These perishable crops, like strawberries, snap beans, etc., bring the most money; but one must make a business of it to sell them. What can we grow that will have at least some value, even if we do not succeed in selling it when it is just right for the table? Well, there are quite a number of things. To begin with, all the beans we list are valuable in the dry state; and just now I could offer from \$1.50 to \$4.00 and even \$5.00 a bushel for any of the beans we advertise if anybody had any to spare. Burpee's bush lima especially has for several years been worth from \$3.00 to \$5.00 a bushel for the dry beans; and I do not know what is to hinder somebody growing an acre and making "big money," unless it is the first cost of the seed. Of course, sell all you can for green beans. There is seldom a time they can not be sold at a good price in any town or city. If the people do not want them all green, just let them get dry and thrash them out.

If you have horses or cattle you can grow all kinds of beets. Sell them green if you can; if you can not, feed them to stock. In growing roots for stock, however, we have had rather the best success with carrots. These always sell for enough to pay quite well for growing; and although there may be horses and cattle that will not eat *sweet clover* when it is nice and green, I do not think you will find one that will not eat carrots with avidity, and thrive on them. Mix the carrots in with the dry feed along in winter and spring, and see if you do not call it a good investment.

Sweet corn can also be fed to horses and cattle if you can not sell it all green.

And you want to grow some onions. When they are just right to pull, give great big bunches for a nickel. Astonish people by the big lot of handsome ones you give for a small amount of money. Also grow some sets. Every little while onion-sets are worth from \$3.00 to \$5.00 a bushel. Get a variety you can handle; learn how to grow them, and then have some on hand every spring, and you will hit it once in a while, sure. And Hubbard squashes. Did anybody ever know a time when nice Hubbard squash would not sell for enough to pay a big profit on the investment? But you must have the ground rich. Clean out the poultry-house and the pigpen, and work the contents into the ground thoroughly. Spread your compost-heap where you are going to have your squashes. Then wherever you plant a hill, dig down a foot or a foot and a half, and make the hill a yard across, and dig it over every little while till it is time to plant the seeds. Then use the squash-boxes with a pane of glass on top. You must meet the first bug more than half way, and so on with the second and third. Scare them so badly to begin with that they will think the locality is not healthy; then after every thing else is off the ground put in some turnips and manage in the same way.

Meanwhile do not forget potatoes. Have them on the market before any one else in your neighborhood has thought of such a thing. Then when everybody else is bringing them in, get ahead of them all by showing some *nicer* ones than anybody else has seen. Then have potatoes coming along ready to dig clear up till frost. If they do not bring a good price in the fall, have some in the spring a little nicer and a little better than anybody else.

Now, if you want seeds of all these things look over our list in our last issue or send for our complete seed catalog. Please note our exceedingly low prices on beet seed, carrot seed, parsnip seed, squash seed, etc., in 5 and 10 pound lots.